Soft Skills, Hard Skills, Individual Innovativeness, and Migration: Evidence from Indonesia

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Contents

List of Figures		v
List of Tables		v
List of Abbreviations		vii
Acknowledgments		viii
Authorships		ix
Dedications		x
Deutschsprachige Zusammenfassung		xi
1.	Introduction	1
1.1	Individuals Endowed with Human Capital	1
1.2	Skills and Innovation	2
1.3	Human Capital, Migration, and Entrepreneurship	3
1.4	Indonesia at a Glance	4
1.5	The Structure of the Dissertation	7
2.	Soft Skills, Hard Skills, and Individual Innovativeness	11
2.1	Introduction	11
2.2	Literature and Hypotheses	12
2.2.1	Hard Skills	12
2.2.2	Soft Skills	13
2.2.3	Innovativeness	14
2.2.4	Hypotheses	15
2.3	Methods	16
2.3.1	Survey Design	16
2.3.2	Data	20
2.4	Econometrics Method and The Tested Model	23
2.5	Results	24
2.6	Conclusion	27
2.7	Appendices	29

3.	The Attractiveness of Regional Knowledge and Entrepreneurship for Migration	37
3.1	Introduction	37
3.2	Literature and Hypotheses	38
3.3	Data	49
3.4	Method	40
3.5	Results	43
3.6	Conclusion	52
3.7	Appendices	54
4.	Regional Choices and Remittances: Evidence from Indonesia	63
4.1	Introduction	63
4.2	Literature and Hypotheses	64
4.2.1	Literature	64
4.2.2	Hypotheses	66
4.3	Data	67
4.4	Method	70
4.5	Results	72
4.6	Conclusion	75
4.7	Appendices	77
5.	Conclusions	89
5.1	Overview of the Main Findings	89
5.1.1	Soft Skills, Hard Skills, and Individual Innovativeness	89
5.1.2	The Attractiveness of Regional Knowledge and Entrepreneurship for Migration	91
5.1.3	Regional Choices and Remittances: Evidence from Indonesia	92
5.2	Novelty	93
5.3	Policy/Practical Implications	94
5.4	Limitations and Further Research Agendas	95
References		97
Erklärung		105
Curriculum Vitae		106

List of Figures

Figure 1.1 Map of Indonesia and its Population Density per Province (2014) 5
Figure 1.2 GDP per Capita (Current USD) among Countries 6
Figure 2.1 Number of Individual-Respondent for Each Firm out of 355 Firms 30
Figure 4.1 IFLS Coverages 68
Figure 4.2 Location of Each Province (Region) on Map of Indonesia 88

List of Tables

Table 2.1 The Summary of All Core Variables in the Questionnaire 18
Table 2.2 Summary of Control Variables 19
Table 2.3 Total Employees Based on Age Range 22
Table 2.4 Principal Component Analysis 24
Table 2. 5 Cronbach's Alpha 24
Table 2.6 Regression Model 25
Table 2.7 Summary Statistics 29
Table 2.8 Correlation 31
Table 2.9 Variance Inflation Factor (VIF) of the Model (3) 33
Table 2.10 Indonesia Reference: Total Employees based on Firm Size 34
Table 2.11 Total Respondents based on Firm Size and Industry 34
Table 2.12 Indonesia Reference: Total Industrial Contribution to the Total GDP (2014) 35
Table 2.13 Private/Public Employment with the Highest Education Degree 36
Table 2.14 Education and Employment Status in Indonesia 36
Table 3.1 Region-Choices Model (Primary: Region Specific Variables) 44
Table 3.2 Region-Choices Model (Extension) 47
Table 3.3 Region Choice Model: Classifying based on Origin Region Economic Conditions 50
Table 3.4 Summary Statistics 54
Table 3.5 Correlation Table 55
Table 3.6 Region Distance Matrix: Origin –Destination 56
Table 3.7 Complete Model: Classifying based on Origin Region Economic Conditions 58
Table 4.1 Region Choices Model (Primary: Region-Specific Variables) 73

Table 4.2 Remittances and Migration Model 74
Table 4.3 Summary Statistics of Model M1 77
Table 4.4 Correlation Table of Model M1 77
Table 4.5 Region-Choices Model M1 (Complete Model) 78
Table 4.6 Summary Statistics of Model M2 81
Table 4.7 Correlation Table of Model M2 82
Table 4.8 Remittances and Migration Model M2 (Complete Model) 84
Table 4.9 Region Codes (*ProvID*) and Distances (in Kilometres) in the Origin-Destination Matrix 86

List of Abbreviations

AIC	:	The Akaike's information criterion
BPS	:	*Badan Pusat Statistik,* Indonesian Statistics Office
CT	:	Conceptual thinking
DE	:	Density
DI	:	Distance
ED	:	Education Index
GDP	:	Gross Domestic Product
Hard	:	Hard skills
ICT	:	Information, Communication and Technology
IDR	:	Indonesian Rupiah
IFLS	:	Indonesian Family Life Survey
IG	:	Income per capita growth index
IIA	:	The independence of irrelevant alternatives
IL	:	Innovation leadership
IN	:	Income per capita
Innov	:	Innovativeness
IQ	:	Intelligence Quotient
Kemenkop&UKM	:	*Kementerian Koperasi dan Usaha Kecil dan Menengah*, Ministry of Cooperative and Small and Medium Enterprise of Indonesia
MS	:	Micro and small enterprise number
MSG	:	Micro and small enterprise number growth index
OLS	:	The ordinary Least Squares
PCT	:	Patent Cooperation Treaty
PO	:	Passion and optimism
QS	:	Quick study
R&D	:	Research and development
RB	:	Relationship building
Soft	:	Soft skills
TU	:	Tolerance for uncertainty
UG	:	Unemployment rate growth
UNDP	:	United Nations Development Programme
UR	:	Unemployment rate
USD	:	United States Dollar
VIF	:	Variance inflation factors
WIPO	:	World Intellectual Property Organization

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Authorships

This dissertation consists of three individual papers. The first paper, which is chapter 2 in this dissertation, is co-authored with Prof. Dr. Uwe Cantner. He contributed significantly to the accomplishment of the paper by giving important thought for developing the hypothesis, the literature, and the methods. We have designed together the questionnaires and we have analysed and discussed the results. The second and the third paper, which is Chapter 3 and Chapter 4 respectively, are my single-authored paper. The accomplishments of the last two papers are supervised mainly by Prof. Dr. Silke Übelmesser.

Jena, January 24th, 2017

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Dedications

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Deutschsprachige Zusammenfassung

1. Individuelle Skills und Innovation

Der Mensch hat unterschiedliche Rollen im sozialen und wirtschaftlichen Kontext. Im sozialen Kontext existieren Individuen in einer Familie, in der Gesellschaft und in einer Nation. Sie haben hier Sozialkapital. Aus ökonomischer Sicht haben Individuen auch als Humankapital in einer Familie, in einer Firma und in einer breiteren Organisation oder Institution auf lokaler, regionaler oder internationaler Ebene eine Bedeutung. Darüber hinaus Spielt Humankapital auf makroökonomischer Ebene eine Rolle für den komparativen Vorteil unter den Nationen der Welt (Benhabib und Spiegel 1994). Besseres Humankapital kann in angemessenem Maße im sozialen und wirtschaftlichen Umfeld und ihrer Entwicklung beitragen.

Mitarbeiter können Innovation und feste Leistung vorantreiben. Sie nutzen ihr Wissen, ihre Fähigkeiten, ihre Erfahrung und ihr Netzwerk für ihre täglichen Aufgaben. Ihr Wissen und ihre Fähigkeiten können durch Erziehung, Ausbildung und Interaktionen entwickelt werden (Blundell et al., 1999). Individuen lernen voneinander durch Wissenstransfer (*knowledge transfer*), allerdings immer in Abhängigkeit ihrer individuellen Absorptionsfähigkeit (*absorptive capacity*).

Innovation ist der Prozess zur Schaffung eines neuen Produkts oder einer neuen Dienstleistung, entweder mit neuen Methoden oder neuen Technologien, die am Ende von einigen Kunden auf dem Markt akzeptiert werden. Die Neuheit der Produkte oder Dienstleistungen kann dabei inkrementell oder radikal sein. Insgesamt betreffen Innovationen die gesamte Managementfunktion in einer Organisation. Es ist mit den Forschungs- und Entwicklungsaktivitäten, dem Produktions- und Betriebsprozess, dem Finanzmanagement, dem Humankapital und dem Management sowie dem Marketingmanagement verbunden. Jede Funktion sollte neue Methoden zur Unterstützung des Innovationsprozesses liefern und vorschlagen.

Auf individueller Ebene sind Kompetenzen erforderlich, um auch in den Innovationsprozess einzugreifen. Skills sind Teil der Kompetenz zur Durchführung einer Arbeit. Unterschiedliche Jobs erfordern unterschiedliche, spezifische Skills und dienen der beruflichen Innovation. Da Skills entwickelt werden können, ist es wichtig, sie zu erkennen, um den geforderten Qualifikationen einer Stelle zu entsprechen. Nicht nur Hard Skills, die mit technischen Fähigkeiten verknüpft sind, sondern auch Soft Skills, die zwischenmenschliche Beziehungen ansprechen sind von Bedeutung. Darüber hinaus, können Einzelpersonen ihre Innovation an eigenen Werkzeugen und Maschinen generieren. Im Rahmen des Innovationskonzepts kooperieren

Individuen innerhalb eines Teams, einer Abteilung, einer Organisation oder sogar zwischen Organisationen und bauen damit eine gewisse Beziehung auf (Enkel et al. 2009). Es ist klar, dass Unternehmen Netzwerke mit anderen Unternehmen, Forschungseinrichtungen oder Regierungen brauchen, um Innovationen zu schaffen. Deshalb brauchen sie von Ihren Mitarbeitern nicht nur Hard Skills, sondern auch Soft Skills, also zwischenmenschliche Fähigkeiten, um Innovation zu generieren.

2. Migration und Entrepreneurship

Einzelpersonen versuchen auf dem Arbeitsmarkt zu überleben, indem sie eine gute Passfähigkeit für den Arbeitsmarkt bieten oder ihr eigenes Unternehmen gründen. Wenn diese Bedingungen nicht gegeben sind, dann werden sie an andere Orte auswandern. Diese Bewegung ist mit dem Konzept der Migration verbunden (Gordon 1995). Menschen wählen eine Region anhand bestimmter Kriterien aus. Allerdings müssen Regionen, die von einer Regierung verwaltet werden, potenzielles Humankapital anziehen. Einige spezifische Bereiche können bestimmte Individuen anziehen, z.B. Humankapital mit Talent, das einen höheren Bildungsabschluss hat (Florida 2002).

Die Region kann Bildung, Industrie und öffentliche Einrichtungen zur Verfügung stellen. Diese Angebote tragen zur Unterstützung des Wirtschaftswachstums bei, welches durch Humankapital getragen wird. Einzelpersonen mit ihren persönlichen Fähigkeiten können entscheiden, in ihrer Heimatregion zu bleiben, oder sie können wählen, in eine andere Region zu migrieren. Bildung schafft eine Wissensbasis für Personen. Einige Menschen wandern ab, um bessere Bildungseinrichtungen zu finden. Humankapital kann dadurch die sozialen und wirtschaftlichen Aktivitäten einer Region prägen.

Eine der wichtigsten wirtschaftlichen Aktivitäten sind Unternehmensgründungen und Innovationen. Es gibt Regionen, die hinsichtlich Innovation und Entrepreneurship sehr produktiv sind (Cooke 2007, Scott 2006). Diese Regionen sind mit den Regierungspolitiken vereinbar, um Unternehmertum zu fördern, da sie die Gründung von Kleinst-, Klein- und Mittelbetrieben oder Großunternehmen unterstützen.

Einzelpersonen können mit ihrem Einkommen einander helfen. Einer der wichtigsten Beiträge der Menschen ist, Geld von der Gastgeber- oder Zielregion zu ihren Verwandten oder Familien in ihrer Heimat- oder Ursprungsregion zu schicken. Das Geld kann dann verwendet werden, um grundlegende Bedürfnisse zu erfüllen, die am Ende das Wirtschaftswachstum im Heimat- oder Herkunftsgebiet unterstützen können (Taylor 1999). Diese Routineaktivitäten sind so genannte Überweisungen oder *Remittances* (Catrinescu 2009).

3. Der Kontext von Indonesien

Indonesien hat seine Einwohner[1] zwischen 2010 und 2014 von 238,5 Millionen auf 252,2 Millionen Menschen erhöht. Vergleicht man das Jahr 2014 und das Jahr 1990, so hat sich die Gesamtbevölkerung um fast 73 Millionen Menschen erhöht, was bedeutet, dass sie sich mehr oder weniger 40,5 Prozent erhöht hat. Es bringt Indonesien auf den vierten Rang im Jahr 2015 der bevölkerungsreichsten Länder der Welt[2]. Bezüglich der ökonomischen Parameter hat sich Indonesiens Pro-Kopf-BIP (Bruttoinlandsprodukt) zum aktuellen Preis von 28,8 Millionen Indonesische Rupiah, IDR, (im Jahr 2010) auf 41,8 Millionen IDR (im Jahr 2014)[1] erhöht. Basierend auf Angaben der Weltbank (the World Bank), beträgt das Indonesische Pro-Kopf-BIP zum aktuellen Preis 3.346 US-Dollar, USD, (im Jahr 2015). Damit ist es relativ gering, im Vergleich zu Deutschland, 41.219 USD oder Nordamerika, 54.580 USD, sogar vergleichbar mit Ländern mit niedrigem und mittlerem Einkommen (Indonesien ist in dieser Kategorie), 4.244 USD. Aber es ist höher als Indien zum Beispiel, mit 1.581 USD. Jedoch wird Indonesiens BIP als das 16. größte BIP (im Jahr 2015) mit 861.933 Million USD eingestuft. Darüber hinaus hat 2014 Indonesien eine Inflationsrate von 8,4 Prozent. Sie steigt im Vergleich zum Jahr 2010, das sind 7 Prozent.

Des Weiteren war im Hinblick auf die Innovation auf der Grundlage der Datenbank für WIPO (World Intellectual Property Organization) unter Verwendung der Daten[3] des "Patent Cooperation Treaty" (PCT), die Patentanmelder bei der Verfolgung des Patentschutzes international für ihre Erfindungen unterstützt, die Gesamtzahl der Patentanmeldungen von Indonesien im Jahr 2014 recht klein, nur 771 Anmeldungen. Dieser Wert ist niedriger als für Indonesiens Nachbarländer, wie Thailand, 1.405; Malaysia, 2.664; Singapur, 5.930. Hingegen zeigt der Wert für Indonesien eine höhere Patentanzahl als für Vietnam (561) und die Philippinen (608). Allerdings ist es niedriger als in anderen Ländern Indien, 22.458; Deutschland, 179.535; und USA, 509.622 Anwendungen.

Darüber hinaus, ist die Gesamtzahl der internationalen Zeitschriftenpublikation von Indonesien im Jahr 2014 mit 6.229 Veröffentlichungen in der Zeitschrift Veröffentlichung als Innovations-und Forschungs-Output-Indikatoren, auf der Grundlage der SCImago Journal & Country Rank (Portal, das die Zeitschriften und Land wissenschaftlichen Indikator

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[1] Quelle: *Statistik Indonesia*, Statistical Yearbook of Indonesia 2015. Statistics Indonesia (*Badan Pusat Statistik*, BPS), https://www.bps.go.id/index.php/publikasi/1045

[2] Quelle: Population Reference Bureau, http://www.prb.org/Publications/Datasheets/2015/2015-world-population-data-sheet.aspx

[3] Quelle: WIPO Statistics Database. http://ipstats.wipo.int/ipstatv2/index.htm?tab=patent

umfasst)[4] zu finden. Dieser Wert ist niedriger als für Indonesiens Nachbarn, wie Malaysia, 27.960; Singapur, 19.044; Thailand, 13.242. Aber, er ist höher als für Vietnam (3.955) und die Philippinen, (2.022).

4. Soft Skills, Hard Skills und Innovationsfähigkeit im Überblick

Kapitel 2 fasst bisherige Forschungen über Soft Skills und Hard Skills im Verhältnis zur Innovationsfähigkeit (*Innovativeness*) der Mitarbeiter auf individueller Ebene zusammen. Das Kapitel verwendet einige Messungen von Skills und Innovationen, die neu in der Literatur sind. Ziel ist es, konzeptionelle Modelle zu erforschen und zu entwickeln, die das Verhältnis von Soft Skills, Hard Skills und Innovationsfähigkeit auf der Grundlage von Indonesien als Entwicklungsland beschreiben. Laker and Powell (2011, S. 112) erklären, dass Soft Skills "intrapersonale Skills sind, wie die Fähigkeit, persönliche Eigenschaften zu managen und zwischenmenschliche Skills, wie ein Arbeiter mit Interaktionen mit anderen umgehen". "Hard Skills sind Fähigkeiten im Zusammenhang mit technischen Aspekten, um Aufgaben in der Arbeit durchzuführen. Dabei benötigen sie häufig den Erwerb von Wissen (Page, Wilson, & Kolb, 1993). Hard Skills sind vor allem kognitiver Natur und beziehen sich auf den Intelligenzquotienten (IQ) des Arbeiters (Rainsbury et al., 2002, S.9). Van Oort et al. (2009) beziehen sich auf innovationsfähigkeit auf individueller Ebene, die technische und nicht-technische Innovationen beinhalten. Technische Neuerungen betreffen die Verbesserung von Produkten oder Produktionsprozessen oder die Schaffung neuer Produkte und neuer Produktionsprozesse. Darüber hinaus beziehen sich nicht-technische Neuerungen auf die Verbesserung oder Entwicklung von Management, Organisation und Dienstleistungen (Van Oort et al., 2009, S. 864). Individuelle innovationsfähigkeit ist ein individueller Arbeitsplatzindikator für Innovation.

Umfragen wurden unter Verwendung eines Online-Fragebogens durchgeführt, welcher an verschiedene indonesische Firmen aus unterschiedlichen Sektoren und deren Arbeitnehmer versandt wurde. Die Umfragen wurden von Februar 2015 bis Juni 2015 durchgeführt. Die Studie beinhaltet 519 Daten auf individueller Ebene. Unter Verwendung des normalen ordinary least squares, OLS-Modells gibt es einige Erkenntnisse, die berücksichtigt werden müssen. Es zeigt sich, dass Soft Skills und Hard Skills eine signifikante und positive Beziehung zur Innovationsfähigkeit haben. Aber die Wechselwirkung zwischen Soft Skills und Hard Skills ergibt eine unbedeutende Beziehung zur Innovationsfähigkeit. Soft Skills bestehen aus Variablen wie Innovationsführerschaft, Beziehungsbildung, Toleranz gegenüber Ungewissheit,

[4] Quelle: Scimago Journal and Country Rank. http://www.scimagojr.com/countryrank.php?year=2014

Leidenschaft und Optimismus. Während die Hard Skills Faktoren einschließen wie: Fähigkeiten in der Informations- und Kommunikationstechnologie (IKT), Geschick für Werkzeuge und Ausrüstung, sowie Lernen und konzeptionelle Fähigkeiten.

5. Regionale Kenntnisse und Unternehmertum für Migration im Überblick

In Kapitel 3 wird eine Forschungsarbeit erarbeitet, die empirische Ergebnisse liefert, die auf einigen Kontexten Entrepreneurship und regionaler Migration basieren. Ziel ist es, die bestimmenden Faktoren der regionalen Entscheidungen zu untersuchen.

Diese Studie verwendet zwei sekundäre Datenbestände, die indonesische Familienlebensstudie (IFLS)[5] und das indonesische Statistikamt (*Badan Pusat Statistik* (BPS))[6] für den Zeitraum 2010-2014. Das Modell, das in dieser Analyse verwendet wird, um die regionale Auswahl in der regionalen Migration zu zeigen, ist das *alternative-specific conditional logit model* (McFadden 1974). Dieses Modell kann die Wahrscheinlichkeit für ein Individuum vorhersagen, eine Alternative zu wählen, wobei einige mögliche Alternativen auf der Basis eines Faktors oder einer Determinanten Bedingung, die die Alternativen beschreiben können, gegeben sind. Diese Studie kann die bisherige Forschung im Blick auf die Methodik verbessern. Diese Forschung wird verwendet, um den paarweisen Vergleich zwischen Ursprungs- und Zielregion Darzustellen.

Es zeigt sich, dass Wissen und eine Reihe von Kleinst- und Kleinunternehmen mit den regionalen Entscheidungen der Migranten in Verbindung stehen. Im Rahmen des Wissens, das Unternehmen unterstützen kann, gemessen mit Hilfe der Proxys des Bildungsindexes, scheinen die Menschen in Indonesien die weniger entwickelte Wissensregion zu wählen. Andererseits kann im Rahmen des Unternehmertums die Zahl der Kleinunternehmen einer Region die Wahrscheinlichkeit erhöhen, dass diese Region als Migrationszielregion gewählt wird.

6. Region Wahl und Überweisungen im Überblick

In Kapitel 4 werden empirische Studien beschrieben und Erkenntnisse und Ergebnisse auf der Grundlage von Zielen gegeben, um die determinierenden Faktoren der Überweisungen oder *Remittances* im Kontext der regionalen Auswahl zu untersuchen. Diese Studie verwendet zwei sekundäre Datenbestände, die indonesische Familienlebensstudie (IFLS) und das indonesische Statistikamt (*Badan Pusat Statistik* (BPS)) für den Zeitraum 1990-1992. Diese Analyse wendet aus methodischer Sicht ein ähnliches Modell an, wie Kapitel 3. Ziel ist es, den

[5] Quelle: http://www.rand.org/labor/FLS/IFLS.html
[6] Quelle: https://www.bps.go.id

vorhergesagten Wert der Wahrscheinlichkeit einer Region zu ermittelt, die gewählt wird als Migrationszielregion. Darüber hinaus werden die Ergebnisse dieses Modells als zusätzliche erklärende Variable im Determinantenmodell von Überweisungen verwendet. Es zeigt sich basierend auf dem Migranten-Region Auswahlmodell, dass Selbständigkeit Status und eine jüngere Gruppe eine positiven und signifikanten Beziehung auf Überweisungen haben.

Chapter 1
Introduction

1.1 Individuals Endowed with Human Capital

Individuals have a different role in social and economic contexts. In a social context, individuals exist within a family, in a society, and in a nation; they have social capital. From an economic point of view, individuals function as human capital in a family, in a firm, and in a broader organisation or institution at either a local, regional or international level. At a macroeconomic level, human capital is linked to competitive and comparative advantages among nations in the world (Benhabib & Spiegel, 1994). Better human capital can contribute to the social and economic environment and development. From a social point of view, individuals prefer to live in a safe, secure, fair and peaceful environment. In addition, from an economic point of view, Individuals as economic actors endowed with human capital prefer to live in prosperity and a living well condition. People need some level of income; if they are economically active, this income comes from their jobs or businesses.

As an important actor, individuals being endowed with human capital can drive innovation and a firm's performance. Individuals use their knowledge, skills, experience, and network to perform their daily jobs. Their knowledge and skills can be developed through education, training, and interactions (Blundell, Dearden, Meghir, & Sianesi, 1999). Moreover, through learning and doing, they

have a certain level of competence. They have some technological know-how, know-what and know-why regarding some procedural tasks in their firms.

Individuals learn from each other through knowledge transfer. They acquire knowledge based on their absorptive capacity. Some knowledge can be absorbed quickly and easily through coding, records, or a manuscript. Such types of knowledge are defined as explicit knowledge. However, there is another type of knowledge that cannot be easily acquired; it is tacit knowledge, whereby an individual should take the initiative to learn through exercises and experiences in order to obtain this knowledge. Moreover, through knowledge spillovers, some firms, organisations and institutions share their knowledge with each other (Engelbrecht, 1997).

Human capital is a major factor in innovation. Individuals, teams and organisations bring about innovation to increase productivity and profit in order to survive in the competitive business environment (Black & Lynch 1996). Therefore, they need capital as an organisation's input, and not only physical capital such as machines and equipment, but also the most substantial capital, human capital. Appropriate studies and policies are needed to develop skills as an important aspect of human capital (Heckman, 2000). Chapter 2 of this dissertation studies the relationship between individual skills and individual innovativeness. The study applies surveys to the firm's employees as individuals endowed human capital.

Furthermore, in spatial and geographical contexts, regions can attract human capital. In this situation, an individual with/without his/her family migrates from a region to other areas. He/she will choose a region that fits his/her purposes or needs. Moreover, entrepreneurship in a region can become a determining factor in regional choices because businesses need social and human capital (Davidsson & Honig, 2003). Therefore, it is important to discover the determinants that can attract migrants because regional development needs to fit human capital. Chapter 3 and Chapter 4 of this dissertation studies individuals endowed human capital in families in regional migration context.

1.2 Skills and Innovation

Innovation is the process of creating a new product or new services by using either new methods or new technology that, in the end, can be accepted by customers either in the beginning that product or services are demanded or not demanded by the costumers in the market. The newness of the products or services can be a difference from a previous product or it can be a new product to the market. Overall, innovation deals with the entire management function in an organisation. It is connected to research and development activities, production and operation processes, financial management, human capital management, and

marketing management. Every function should deliver and propose new methods to support the innovation process. Innovation is not only related to technical innovation but also non-technical innovation, because innovation is connected with the overall management of organisations.

Without individual actors, innovation is impossible. At the individual level, necessary skills are required both to engage in the innovation process as well as to create the innovation outcome. Skills are part of the competence required to perform a job. Different jobs require different skills. Skills can be categorised into two types—hard skills and soft skills (Laker & Powell, 2011). Every job task, including job-related innovation, needs some specific skills. Because skills can be developed, it is important to identify skills —not only skills linked to technical ability, namely hard skills, but also skills connected to intrapersonal and interpersonal relationships, so-called soft skills—needed to match the job qualifications.

Within the concept of innovation, individuals cooperate and build relationships with each other within a team, division, or organisation or even inter-organisationally (Enkel, Gassmann, & Chesbrough, 2009). It is clear that firms or businesses need some networks, such as other companies, research institutions or the government, in order to create innovation. Therefore, individuals in the firms need not only hard skills but also soft skills, intrapersonal and interpersonal skills to perform innovation through networking or relationship. There are research gaps regarding skills in the context of innovation at the individual level. Previous studies have focused on skills that are related to innovation at the firm level instead of the individual level. These gaps will be addressed in Chapter 2 of this dissertation.

1.3 Human Capital, Migration, and Entrepreneurship

Individuals try to fit their competences with the job market or to create their businesses in a particular location. If their location is not suitable for their demands, they move to other places. This movement is connected to the concept of migration (Gordon, 1995). They will choose a region based on certain criteria. Some specific areas can attract specific individuals, e.g., human capital with talent that has a higher education degree (Florida, 2002).

Additionally, a region can provide education, industries, and public facilities. These services are developed to support economic growth which is driven by human capital. Individuals with skills can decide to stay in their home region from their time of birth, or they can choose to migrate to another region. Furthermore, education delivers knowledge to individuals, and some people move to find better educational institutions.

In addition, one of the most important economic activities is entrepreneurship and innovation. There are some regions that are very productive with regard to creating and supporting innovation and entrepreneurship in a geographic context (Cooke, 2007; Scott, 2006). These regions are those with government policies to boost entrepreneurship through starts-up in micro, small and medium firms or large companies. Once entrepreneurs find the right region, they struggle to become creative and innovative entrepreneurs in order to survive in the market. Additionally, Sternberg (2011) argues that in regional development, the density of a region plays an important role. High-density regions are more prevalent in urban than rural areas. These regions can develop better start-ups, the size of which in developing countries is relatively small. In addition, these start-ups are more innovative because high-density regions provide more skilful human capital, higher education and more research institutions. Moreover, knowledge transfer and spillovers are relatively easily carried out among individuals. Therefore, a region with a high-density population is positively correlated with many aspects such as educational institutions, the number of enterprises, and the stock of knowledge and human capital. All of these aspects can attract individuals or entrepreneurs to move to the high-density destination through migration.

Individuals with a particular income can help each other. One of the most important contributions of people is to send money from the host or destination region to their relatives or families in their home or origin region. The money can then be used to fulfil at least the basic needs that in the end can support economic growth in the home or origin region (Taylor, 1999). These routine activities are so-called remittances (Catrinescu, 2009).

In sum, in the context of regional migration, it is important to study the determinants of region choices and remittances (Hoddinott, 1994; Merkle & Zimmermann, 1992). This research can then provide contributions to human capital and human behaviour regarding the social and economic aspects. There are research gaps concerning the determinant factors of the location choice in regional migration that connect to entrepreneurship and knowledge. There are also gaps in determinant variables of remittances related to occupational status, education level, and age group. These economics aspects and research gaps will be explained studied in Chapter 3 and Chapter 4 of this dissertation.

1.4 Indonesia at a Glance

Since this dissertation uses Indonesia as its context, this introductory part describes the macro conditions of Indonesia in 2010s. Some macro indicators are used in the following, such as population density, gross domestic product (GDP) or income per capita, unemployment rates and innovation. In addition, to understand the conditions of Indonesia as part of the global community, this

section tries to compare the conditions to those in other countries in the world, both developing countries and developed countries.

Indonesia has increased its population[1] between 2010 and 2014, from 238.5 million to 252.2 million people. Comparing the year 2014 with the year 1990, the total number of inhabitants has increased by almost 73 million people, meaning that it has increased by 40.5 percent. It makes Indonesia the fourth most populous country in the world[2] in 2015. In 2014, in terms of population, the West Java (*Jawa Barat*) province of Indonesia had the largest population, of around 46 million people.

Indonesia has an area of 1,910,931.32 square kilometres (km^2) with the Central Kalimantan (*Kalimantan Tengah*) Province as the largest area with 153,564.5 km^2 (8.04 percent of the total area of Indonesia). The capital city of Indonesia, Jakarta, is located in the DKI Jakarta Province with an area of 664 km^2 (0.03 percent of the total area of Indonesia). Indonesia has a density of 132 people/km^2. The DKI Jakarta Province has the highest population density in Indonesia, with 15,173 people/km^2 (see Figure 1.1).

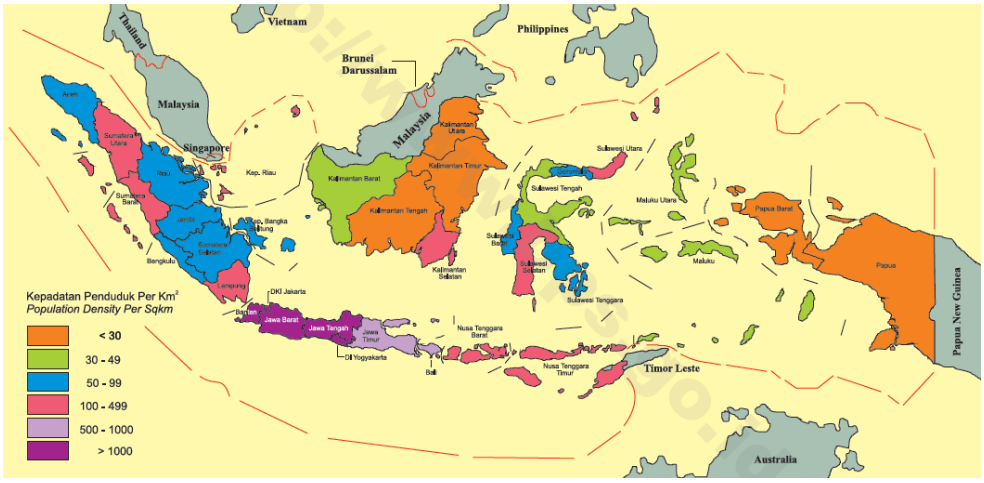

Figure 1.1 Map of Indonesia and its population density per province (2014)
(Picture is taken from the Statistical Yearbook of Indonesia 2015[1], p. iii)

In terms of economic parameters, Indonesia's per capita GDP at the current price has increased from 28.8 million Indonesian Rupiah—IDR (in 2010) to 41.8 million IDR (in 2014). Additionally, according to the World Bank, Indonesia's per capita GDP at current price is 3,346 United States Dollar—USD (in 2015). It is relatively low, compared to that of Germany, with 41,219 USD, or North

[1] *Statistik Indonesia*, Statistical Yearbook of Indonesia 2015.
[2] Population Reference Bureau

America, with 54,580 USD, and even compared to that of all low and middle-income countries (Indonesia is in this category), at 4,244 USD. But it is higher than India's, for example, at 1,581 USD. Figure 1.2 shows an illustration of GDP per capita in the world. In terms of total GDP in 2015, Indonesia ranks the 16th with 861,933 million of USD. In this case it is lower than India, with 2,095,398 million of USD, Germany, with 3,363,447 million of USD, and North America, with 19,593,076 million of USD. In 2015, Indonesia has an inflation rate of 6.4 percent, India, with 5.9 percent, Germany, with 0.2 percent, North America, with 0.6 percent. In 2014, the unemployment rate in Indonesia was 6.2 percent. It was higher than Germany with 5.0 percent and India with 3.6 percent. But it was a little bit lower than North America with 6.3 percent.

Figure 1.2 GDP per capita (current USD) among countries
(Picture is taken from the World Bank).

In terms of innovation, based on the World Intellectual Property Organization (WIPO) statistical database and using data from the Patent Cooperation Treaty (PCT) that supports patent applicants in pursuing patent protection internationally for their inventions, the total patent applications for Indonesia in 2014 was quite small—771 applications. It was lower than its neighbouring countries, such as Thailand with 1,405 applications, Malaysia with 2,664 applications, and Singapore with 5,930 applications. But, it was higher than Vietnam with 561 applications and the Philippines with 608 applications. The

Indonesia's patent application numbers relative to the respective populations become worse because Indonesia has 252.2 million populations. Then, Indonesia has 3 applications per one million populations. It was lower than Thailand with 21, Malaysia with 88, Singapore with 1,075, Vietnam with 6 and Philippines with 6 applications per one million populations. It was much lower than USA with 1,598 applications per one million populations and Germany with 2,217 applications per one million populations.

Additionally, in terms of journal publications as innovation and research output indicators, based on The SCImago Journal & Country Rank (portal that includes the journal's and country's scientific indicator), the total of international journal publications for Indonesia in 2014 was 6,229 publications. It was lower than those of its neighbours, such as Malaysia with 27,960 publications, Singapore with 19,044 publications, and Thailand with 13,242 publications. It was, however, higher than those of Vietnam with 3,955 publications and the Philippines with 2,022 publications. In term of total publication relative to the respective populations, Indonesia has 14 publications per one million populations. In the other hand, Malaysia, Singapore, Thailand, Vietnam and Philippines have 926; 3,451; 197; 43; and 20 publications per one million populations, respectively.

1.5 The Structure of the Dissertation

This manuscript is written using the following structure: Chapter 1: introduction, Chapter 2: soft skills, hard skills, and individual innovativeness, Chapter 3: the attractiveness of regional knowledge and entrepreneurship for migration, Chapter 4: region choice and remittances, and Chapter 5: conclusions. The main chapters are written based on one strand of literature about individual levels of human capital. A summary of the main chapters (chapters 2, 3, and 4) is given in the following.

Chapter 2 studies soft skills and hard skills in relation to the innovativeness of employees at the individual level. Skills that are related to innovativeness at the individual level must be investigated through scientific research because there are research gaps regarding skills in the context of innovation at the individual level. Previous studies have focused on skills that are related to innovation at the firm level instead of the individual level. The objective is to develop a conceptual model that describes the relationship among soft skills, hard skills, and innovativeness. The study uses measures of skills and innovativeness that are new to the literature. Soft skills are "intrapersonal skills such as one's ability to manage oneself as well as interpersonal skills such as how one handles one's interactions with others" (Laker and Powell, 2011, p.112). On the other hand, "Hard skills are skills related to the technical aspects of doing some tasks on the job and they frequently take account of the acquisition of knowledge (Page,

Wilson, & Kolb, 1993)…, hard skills are mainly cognitive in nature and related to a worker's intelligence quotient (IQ)" (Rainsbury et al., 2002, p. 9). As to the third concept, Van Oort, Oud, and Raspe (2009) refer to innovativeness on the individual level as involving technical and non-technical innovations. Technical innovations relate to improving products or production processes, or creating new products and new production processes. Additionally, non-technical innovations relate to improving or developing management, organisations and services (Van Oort et al., 2009). Individual innovativeness is one of individual job performance indicators related to innovation.

Surveys using on-line questionnaires were conducted at various types of firms and among workers in different sectors in Indonesia. The surveys were conducted from February 2015 to June 2015 (over 5 months). The study provides 519 individual-level data. Using the ordinary least squares (OLS) model, it is found that soft skills and hard skills have a significant and positive relationship with innovativeness. But, the interaction between soft skills and hard skills shows an insignificant relationship with innovativeness. In this case, a worker who has both a high level of soft skills and hard skills will not necessarily have a level of innovativeness which exceeds the level which can be attributed to both skills considered individually. Soft skills consist of some variables such as innovation leadership, relationship building, tolerance for uncertainty, passion and optimism. Hard skills, on the other hand, include some factors, such as information, communication and technology (ICT) skills, tools and equipment skills, and learning and conceptual skills.

This study becomes a first step providing some suggestions which could then be used as basis for studies which try to establish causal-effects relationship between soft skills and hard skills and individual innovativeness which then can be used for practical and policy recommendations. If the causal-effect relationships based on the findings of this study are hold true, firms should develop trainings for both types of skills, hard skills and soft skills. Firms can have mixed employees composed of people who only have high soft skills and people who only have high hard skills because there is no interaction effect between soft skills and hard skills with innovativeness. In this case, a worker who has both a high level of soft skills and hard skills will not necessarily have a high level of innovativeness

Chapter 3 elaborates on research that provides empirical results about entrepreneurship and regional migration to examine the determinants of region choices. No research so far has analysed if the level of entrepreneurial activities in a region can induce people to migrate there. The presence of a large number of small companies in a region is an indication that it offers a good environment in which to establish new firms, most of which are usually small in size.

Entrepreneurial activities in a region are important because they present economic alternatives for earning money. One of the supporting factors of a region for entrepreneurial activities is knowledge. Knowledge is important for people to succeed economically. There are research gaps concerning the determinant factors of the location choice in regional migration that connect to entrepreneurship and knowledge. The aim of this study is to examine the region-specific factors – specifically entrepreneurship and knowledge – that can become determinant factors of the location choice in regional migration. This study applies two secondary dataset resources, the Indonesian Family Life Survey (IFLS) and the Statistics Indonesia (*Badan Pusat Statistik* – BPS) for the period 2010–2014. The model used by this research to show the region choice in regional migration is the alternative-specific conditional logit model (McFadden, 1974). This model can predict the likelihood or probability of an individual choosing an alternative, given some possible alternatives based on a factor or a determinant condition that can describe the alternatives. This study can improve upon the previous studies on the determinant factors of the location choice in regional migration in terms of methodology. This study uses the pairwise comparison ratio of the origin-destination region in order to build the alternative-specific conditional logit model for region choices.

There are some findings to be taken into consideration that suggest that knowledge and the number of micro and small enterprises are associated with region choices of migrants. In terms of knowledge that can support businesses, using the proxy of the education index, people in Indonesia would like to choose the less developed knowledge region. On the other hand, in the context of entrepreneurship, the number of small enterprises in a region can increase significantly the likelihood of that region being chosen as a migration destination region. This study becomes a first step providing some suggestions which could then be used as basis for studies which try to establish causal-effects relationship between region specific variables and region choice in migration which then can be used for practical and policy recommendations. Based on the findings, migrants would like to choose regions with less-developed knowledge when they compare the destination and origin conditions. Therefore, this suggest to examine the effect of regional knowledge to the region choice because if it is hold true the local government of the destination region can design knowledge transfer or knowledge-sharing policies that take advantage of the migrants' knowledge because previously they lived in a region with a higher level of knowledge. Migrants flow to regions with more entrepreneurial activities. This suggest to examine the effect of regional entrepreneurship to the region choice because if it is hold true the government could maintain the entrepreneurship ecosystem in the destination region to support migrants' firm performance and sustainability. It is

also important to create a supportive entrepreneurship ecosystem in the origin region to keep the human capital in the region and develop entrepreneurship.

Chapter 4 explains some empirical studies and provides several findings and results based on the objective to examine the determinants of remittances in the context of region choice in regional migration. There are gaps in determinant variables of remittances related to occupational status, education level, and age group. This study applies two secondary dataset resources, the IFLS and the BPS for the period of 1990–1992. This research applies the region choices model, a similar model (but not equal in terms of explanatory variables because of data limitations) to the one that is used in Chapter 3, to produce the predicted value of the likelihood of a region being chosen as a migration destination region. Furthermore, the results of this model are used as an additional explanatory variable in the determinant model of remittances.

This study provides basis for studies which try to establish causal-effects relationship between self-employed migrants and the young group of migrants and remittances which then can be used for practical and policy recommendations. There are some findings to be taken into consideration based on the migrants' region choices model, namely that self-employment status and a younger age have positive and significant relationships with remittances. If these findings are hold true, the central government should support migrants who have moved to become successful self-employed migrants in the destination region so that they can contribute to the economic development not only of the destination region but also of the origin region. The members of the relatively young group aged less than 50 years can contribute to their family through the transfer of funds. Both the central government and the regional government of the origin region can support the relatively young group if they want to migrate to another region as an alternative choice instead of being unemployed in the origin region.

Chapter 2
Soft Skills, Hard Skills, and Individual Innovativeness

2.1 Introduction

Skills are essential for innovation and company performance. Employees, both as human capital and as important actors of innovation, have skills based on the job requirements which allow them to perform their tasks at an individual level. Firms commit some investment costs to developing their employees' skills through training, because the skills are necessary for enterprise performance; i.e., labour productivity. In this case, higher levels of employees' skills are related to a higher average level of labour productivity (Blundell, Dearden, Meghir, and Sianesi, 1999). Innovation – not only technological innovation but also non-technological – can make firms more productive (Mohnen & Hall, 2013).

This study focuses on skills at an individual level because skills belong to firm's employees instead of the firm. In this case, skills are categorised as soft skills and hard skills. Skills that are related to innovativeness at the individual level must be investigated through scientific research (e.g., empirical research) because there are research gaps regarding skills in the context of innovation at the individual level. Previous studies have focused on skills that are related to innovation at the firm level instead of the individual level. Previous researchers have shown that at the firm level, training and knowledge management might determine a firm's innovative performance. Some researchers have studied training at the firm level: (1) Ballot and Taymaz (1997) researched training and innovation, and firms' investment in specific skills through training to gain innovation benefits; (2) Acemoglu (1997) found that companies tend to have innovation when their employees spend more time in training to learn some skills;

(3) Laplagne and Bensted (1999) examined the relationship between training, innovation, and productivity at an organizational-level and found that a combination of training and innovation can increase labour productivity growth; (4) Roy, Cantner, and Gerstlberger (2013) found that some training is essential for innovation. Firms that invest in "general-organizational and managerial training" have a higher probability of having innovation.

This study has the following objectives: (1) to examine the models which describe the relationship between soft skills, hard skills, and innovativeness; and (2) to give suggestions which could then be used as basis for studies which try to establish causal-effects relationship between soft skills and hard skills and individual innovativeness. This research will answer the questions: do soft skills and hard skills of workers have a positive relationship with their innovativeness? Is there any interaction or moderating relationship between soft skills and hard skills with individual innovativeness?

2.2 Literature and Hypotheses

The following section will specifically discuss hard skills (section 2.2.1), soft skills (section 2.2.2), and individual innovativeness (section 2.2.3).

To understand the various types of skills it is helpful to first refer to the broader concept of competency. Stoof, Martens, van Merriënboer, and Bastiaens, (2002) provide various definitions of competency based on a literature review. One of the definitions is provided by Mirabile (1997, p.75), competency is defined as: "knowledge, skill, ability, associated with high performance on the job, such as problem-solving, analytical thinking, or leadership. Some definitions of a competency include motives, beliefs, and values". Another definition of competency is put forward by Spencer and Spencer (1993, p.9): "A competency is an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation. Underlying characteristic means the competency is a fairly deep and enduring part of a person's personality and can predict behaviour in a wide variety of situations and job tasks....". Hence, with skills being part of competency they are considered relevant for the job performance of an individual in general and for innovative performance in particular. Based on that, the following two subsections briefly discuss two types of skills, namely hard skills and soft skills.

2.2.1 Hard Skills

Hard skills can be described generally and also be based on the specific context in which they are used.

As to the former, Rainsbury, Hodges, Burchell, and Lay (2002) define hard skills by: "Hard skills are skills related to technical aspects to do some tasks in the

job and frequently take account of the acquisition of knowledge (Page, Wilson, & Kolb, 1993). Therefore, hard skills are mainly cognitive in nature and are influenced by an individual's Intelligence Quotient (IQ)" (p. 9).

Contextually, some researchers use the concept of hard skills in particular management circumstances. Azim, Gale, Lawlor-Wright, Kirkham, Khan, and Alam (2010) commonly refer to hard skills in a project management context as "processes, procedures, tools and techniques" (p. 392). Marando (2012) describes hard skills in project management as: "…the creation of a tangible deliverable such as a work breakdown structure (WBS), project schedule, critical path diagram, earned value reports, project budgets, dashboards, and so forth. These skills are more technical in nature, and they often incorporate the use of tools such as project scheduling" (p. 2). Poisson-de Haro and Turgut (2012) argue that hard skills, which consist of technical skills and conceptual skills, are essential skills for managers. In this sense, conceptual skills include: "intellectual agility, vision, rationality, wisdom, insight, adaptability, and a sense of mission" (p. 215).

2.2.2 Soft Skills

As with hard skills, soft skills can be described generally and based on a context in which they are used.

In general terms, soft skills are defined as "the interpersonal, human, people, or behavioural skills needed to apply technical skills and knowledge in the workplace" (Weber, Crawford, Rivera Jr, and Finley, 2011, p. 98). Moss and Tilly (1996) define soft skills as: "Skills, abilities, and traits that pertain to personality, attitude and behaviour rather than to formal or technical knowledge" (p. 256). Another definition of soft skills is provided by Kechagias (2011), who suggests that soft skills are "intra- and inter-personal (socio-emotional) skills, essential for personal development, social participation and workplace success. They include skills such as communication, ability to work on multidisciplinary teams, adaptability...." (p. 33). Still using general terms, Laker and Powel (2011) explain that soft skills are "intrapersonal skills such as one's ability to manage oneself as well as interpersonal skills such as how one handles one's interactions with others" (p. 112).

Contextually, as an example of soft skills in project management, Marando (2012, p.2) forwards: "interpersonal skills include traits such as leadership, communication, negotiation, expectations management, influencing, problem-solving, and decision-making".

Hence, soft skills are largely intangible, not associated with a deliverable or a real output, and they are employed without the use of tools or templates.

In view of the literature, the borderline between the concepts relating to hard skills and soft skills are not always clear-cut. According to Rainsbury et al.

(2002, p.9), "... hard skills are mainly cognitive in nature and are influenced by an individual's Intelligence Quotient (IQ)". Hence, IQ is a measurement of cognitive aspects. Given a limited timeframe, it can measure some skills such as conceptual thinking and problem-solving. In addition, Poisson-de Haro and Turgut (2012) classify conceptual skills as hard skills.

Problem-solving skills, decision-making skills (Marando, 2012), and conceptual thinking skills (Spencer & Spencer, 1993) can be classified as soft skills as well. Additionally, quick study (learning) skills, as mentioned by Martino and Bartolone (2011) are also classified as soft skills.

In view of this discussion, for the empirical analysis in this paper learning skills, conceptual skills, and quick study will be classified as hard skills because they have many more cognitive aspects.

2.2.3 Innovativeness

This paper is concerned with individual innovativeness instead of firm level innovativeness as it is at the core of the majority of innovation studies. In the following some characterization of individual innovativeness is suggested looking at both the related types of inputs and outputs.

Individual innovativeness is "engagement in innovative behaviours, which includes behaviours related to the innovation process…" (Parzefall, Seeck, and Leppänen, 2008, p.166). In this case, innovativeness is demonstrated in worker behaviour at the workplace. And from this one can classify worker as being engaged in technical and non-technical or administrative positions and as engaging in more incremental or rather radical innovation activities (if at all).

Individual innovativeness is an individual job performance indicator related to innovation. Goldsmith and Foxall (2003) argue that innovativeness is related to worker behaviour in which workers try new things or create something new. The results of such trials, the new idea for a product or process are an indicator of job performance with respect to innovation activities. In this respect, Van Oort, Oud, and Raspe (2009) refer to innovativeness at the individual level by looking at technical and non-technical innovations. Technical innovations relate to improving products or production processes or creating new products and new production processes. And non-technical innovations relate to improving or developing management, organisation, and services (Van Oort et al., 2009). Other definitions of innovativeness refer to the adoption of innovation (Midgley & Dowling, 1978; Rogers, 2002; Ishak, 2005).

In the following the individual innovativeness concept as proposed by Van Oort et al. (2009) is used because it nicely includes incremental types of innovation which are more relevant in the context of Indonesia. And with the link between individual innovativeness and the involvement in the innovation process

the behaviour to improve existing and create new products or processes is taken on board. To perform those activities successfully, workers need to have proper skills of the types introduced above. Consequently, by this link individual innovativeness connects with individual job performance.

2.2.4 Hypotheses

Based on the rather general concepts of skills and individual innovativeness introduced above, in the following hypotheses are derived that relate skills possibly relevant for innovation and individual innovation performance. In the context of innovation, special hard skills and soft skills can be delineated. Hard skills for innovation can be classified into "subject-based skills" and "thinking and creativity" (Scott & Vincent-Lancrin, 2014, pp. 77–78). The subject-based skills represent skills special to a certain field or technology, whereas rather broadly applicable thinking and creativity skills represent cognitive practices including critical thinking, imagination, and curiosity. Martino and Bartolone (2011) elaborate on essential soft skills for innovation. Those comprise: (1) entrepreneurial orientation, (2) strategic influencing, (3) communication skills, (4) talent for relationship building and maintenance, (5) quick study, (6) tolerance for uncertainty, and (7) passion and optimism. In addition and still in the context of innovation, there is a leadership skill related to innovation, the so-called innovation leadership. Carmeli et al. (2010) explain that innovation leadership is a skill allowing to encourage, to give orientation, and to develop trust and relationships among team members. Workers who show innovation leadership skills can influence or give direction regarding innovative activities at their workplace.

The innovation related hard and soft skills introduced are considered to be positively related to the job performance of workers in terms of innovativeness. Of special interest is the role of soft skills in innovation performance also in comparison with hard skills. The following two hypotheses take account of the presumed relations:

H-1: Soft skills are positively associated with individual innovativeness.

H-2: Hard skills are positively associated with individual innovativeness.

Kantrowitz (2005) and Rainsbury et al. (2002) outline that in order to apply hard skills in a successful way, soft skills are needed. That kind of relation can be formally represented by an interaction term between soft skills and hard skills. The following hypothesis accounts for this relation:

H-3: The interaction between soft skills and hard skills is positively associated with individual innovativeness.

2.3 Methods

2.3.1 Survey Design

For testing hypotheses H-1 to H-3 cross-sectional data are used which came out of a survey on manager and worker perceptions related to individual innovation performance on the one hand and individual skills on the other. The survey was conducted from February 2015 to June 2015 and the elicited responses applied to a three-year period (2012–2014). The survey was conducted as an on-line questionnaire for which about 1000 firms of different sizes and from different industries in Indonesia were approached. The contact addresses were acquired from various sources such as the Internet and researcher network databases. Reminding respondents to fill in the questionnaire was an essential part of the survey. On average, each firm was reminded by e-mail three to five times in the period of one month.

The survey contained questions on the relevant factors to be used in testing the hypotheses introduced above. The following describes these variables.

Soft skills (*Soft*), hard skills (*Hard*), and individual innovativeness (*Innov*) are measured at the individual respondent level using a five-point Likert scale[*], which ranged from strongly disagree (score=1) to strongly agree (score=5). The measurements of each variable are self-developed based on the following literature and formulas.

Soft is a composite of four skills taken from the following literature: Tether et al. (2005), Rainsbury et al. (2002), Weber et al. (2012), Consoli and Elche (2010, 2013), Narver et al. (2004), Hendarman and Tjakraatmadja (2012), and Martino and Bartolone (2011). Based on the arguments by Martino and Bartolone (2011), three soft skills were used: relationship building (*RB*) and maintenance, tolerance for uncertainty (*TU*), and passion and optimism (PO). Last but not least, innovation leadership skills (*IL*) (Carmeli et al., 2010) were included. In this case, *RB, TU, PO*, and *IL* are variables in the questionnaire to measure the composite value of *Soft.* The composite value of *Soft* is calculated by using the geometrical mean.

For *Hard*, three different factors are developed. The literature suggests here the ability to use some software and internet (*Hard1*) and the capacity to operate

[*] A Likert scale is an interval scale that is used to calculate the composite value (mean) of a factor. The factor is comprised of several variables. Boone and Boone (2012) explain the data processing procedures of a Likert scale. Likert scale data measurements are interval scale measurements that use numbers to specify the order and significant relative distance between points on the scale. They do not have an absolute zero. They are different from ratio scale data measurements (e.g., working duration in years) which have an absolute zero. Therefore, descriptive statistics such as mean and standard deviations can be used for the analysis of Likert scale data. Regression procedures can be used for further analysis.

some tools or some equipment (*Hard2*) (Rainsbury et al., 2002; Azim et al., 2010; Zhang, 2012). A further factor is learning and conceptual skills (*Hard3*) (Spencer and Spencer, 1993; Martino and Bartolone, 2011). Factor *Hard1*, *Hard2*, and *Hard3* are developed to calculate the composite value of construct *Hard.* In order to calculate *Hard1*, *Hard2*, and *Hard3*, six variables are deployed as items in the questionnaire. The variables are *HS1*, *HS2*, *HS3*, *HS4*, *HS5, and HS6*. The geometric mean of the ability to use some software (*HS1*) and the ability to use internet (*HS2*) leads to the factor *Hard1*. Then, the capacity to operate some tools or some equipment *(HS2*) is used to measure *Hard2*. Finally, the geometric mean of information seeking *(HS4*), conceptual thinking *(HS5),* and quick study (*HS6*) leads to the third measure of hard skills, *Hard3*. The geometric mean of *Hard1*, *Hard2* and *Hard3* is the overall measure of hard skills, *Hard.*

Innov is developed as the geometric mean of the technical (*TechInno*) and non-technical (*NonTechInno*) innovativeness (Van Oort, 2009; Pedrosa et al., 2010). *TechInno* and *NonTechInno* are developed to calculate the composite value of construct of *Innov.* In order to calculate *TechInno* and *NonTechInno* factor, five variables are deployed as items in the questionnaire. The variables are *TechInno1, TechInno2, TechInno3, NonTechInno1, and NonTechInno2*. Work process improvement (*TechInno1*), product or service improvement (*TechInno2*), and new product or service development (*TechInno3*) are used to calculate a geometric mean labelled *TechInno*. Then, organisational innovativeness *(NonTechInno1*) and marketing innovativeness (*NonTechInno2*) are used to calculate the geometric mean labelled *NonTechInno*.

In this study, *Soft* and *Hard* are used as independent variable, whereas *Innov* is used as dependent variable. The summary of all core variables in the questionnaire are presented by Table 2.1

Next to these core variables, a couple of control variables are included. They are classified into three levels: individual level, firm level, and industry level. At the individual level there are: age (*EmpAge)*, working duration (*WorkingPeriod*), gender (*Female*), level of education (*Education*), and job level (*JobLevel*). *EmpAge* and *WorkingPeriod* are measured in years. *Education* is measured based on the general classification in Indonesia because it is quite heterogeneous, based on the Statistics Indonesia (*Badan Pusat Statistik* – BPS) in February 2015 (see Table 2.14 in the Appendix) starting from the senior high school degree as the highest number (49.6 percent). This is followed by a university degree (23 percent), junior high school degree (20.8 percent), and academy/diploma degree (6.6 percent). *JobLevel* is measured to capture the variation of all level in the firm starting from staff, low-level management, medium-level management, and high-level management including the owners.

Table 2.1 The Summary of All Core Variables in the Questionnaire

Construct	Factor	Variable	Questionnaire
Innov	*TechInno*	*TechInno1*	I have already done a work process improvement in my work place.
		TechInno2	I have been involved in product or service improvement in my work place.
		TechInno3	I have been involved in new product or new service development in my work place.
	Non-TechInno	*NonTechInno1*	Related to innovation, besides my firm organizationally, I individually developed and maintained cooperation with other institution (firm, government, research institution, and investor).
		NonTechInno2	I improved the marketing system in my firm, including sales, promotion or distribution.
Hard	*Hard1*	*HS1*	I am able to use some software for my job. For example: Microsoft Office (Word/Excel/Powerpoint/other), design software, statistical software, specific mechanical software.
		HS2	I am able to use Internet (E-Mail/Browsing/other) for my job.
	Hard2	*HS3*	I am able to use perfectly operate tools and equipment related to my job.
	Hard3	*HS4*	I made an extra effort to find supporting data/information to do my job.
		HS5	I think conceptually when doing my job.
		HS6	I enjoyed getting up to speed on topics that are outside my comfort zone.
Soft	*Soft*	*IL*	I gave an influence or a direction regarding innovation in my work place.
		RB	I used to give extra effort to develop business and professional relationship with partner both inside and outside my firm.
		TU	I felt comfortable making decisions under uncertainty.
		PO	I was able to create forward progress even when I worked on a team that did not work well together.

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Table 2.2 Summary of Control Variables (a)

Classification	Variables	Explanations		
Individual Level	*EmpAge*	Worker's Age (year-old)		
	WorkingPeriod	Worker's Working Period (years)		
	Gender *(Female)*	Female as a dummy variable, 0=No, 1=Yes		
	Education	Worker's Education level (*Education1-Education4*)	1	*JuniorHigh:* Junior high school
			2	*SeniorHigh:* Senior high school
			3	*Academy*: Academy
			4	*University:* University
	JobLevel	Worker's Job level. (*JobLevel1-JobLevel4*)	1	*Staff*: Staff
			2	*Job_LowMan:* Low-level management
			3	*Job_MedMan:* Medium-level management
			4	*Job_HighMan_Owner:* High-level management/Owner
Firm Level	*R&Dactivities*	Firm's R&D activity	0	No, there is no R&D activity
			1	Yes, there is R&D activity
	Department	Department in the firm. (*Department1-Department7*)	1	*Operation_Dept.*: Operation/production
			2	*R&D_Dept*.:Research and development
			3	*Marketing_Dept*.: Marketing
			4	*HR_Dept*.: Organizational development or Human Resources
			5	*ICT_Dept.*: Information and Communication Technology
			6	*Finance_Dept.*:Tax & Finance
			7	*BOD*: Board of Directors
	FirmSize	Firm Size based on total employees (*FirmSize1-FirmSize3*)	1	*SmallFirm*: Small Firm (1-50 Employees),
			2	*MediumFirm*: Medium Firm (51-200 Employees).
			3	*LargeFirm*: Large Firm (more than 200 employees)
	FirmResGroup	Firm-Respondent Group (*FirmResGroup1-FirmResGroup3*)	1	*FirmResGroup1*: Group of firm' response that giving 1-3 worker-respondents
			2	*FirmResGroup2*: Group of firm' response that giving 4-10 worker-respondents.
			3	*FirmResGroup3*: Group of firm' response that giving more than 10 worker-respondents.

Table 2.2 Summary of Control Variables (b)

Classification	Variables		Explanations
Industry Level	Industrial Classification (*Industry1-Industry18*)	1	Agriculture, Forestry and Fisheries
		2	Mining and Excavations
		3	Manufacture
		4	Procurement Electricity, Gas, Steam / Hot and Cold Air
		5	Water Supply, Waste Management and Recycling, Cleaning and Waste Disposal
		6	Construction
		7	Wholesale and Retail Trade; Car and Motorcycles Repair and Car
		8	Transportation and Warehousing
		9	Accommodations, Food and Beverages
		10	Information and Communication
		11	Finance and Insurance
		12	Real Estate
		13	Professional, Scientific and Technical Services
		14	Rental Services, Employment, Travel Agencies and Supporting Other Businesses
		15	Education Services
		16	Health Services and Social Activities
		17	Culture, Entertainment and Recreation
		18	The Other Services: Reparation, Personal and Household Services

At the firm level, there are: research and development activity (*R&Dactivities*), department (*Department*), firm size (*FirmSize*), and firm's response group (*FirmResGroup*). *R&Dactivities* is a dummy variable to measure if there are any R&D activities in the firm or not. *Department* is a dummy variable to control all possible divisions in the firm, e.g. operation/production, R&D, marketing, etc. *FirmSize* is classified into small (1-50 employees), medium (51-200 employees), and large (more than 200 employees). *FirmResGroup* is group of firm based on total respondent from the same firm because there is some differentiation of total respondents given by each firm. Finally, there is industry classification as a control variable at industry level. The classification is used based on the BPS. The summary of control variables are presented by Table 2.2

2.3.2 Data

The data contains 519 observations. These observations were conducted for employee respondents who came from 355 different firms (see Figure 2.1 in the Appendix) and 18 industrial classifications. Table 2.7 in the Appendix shows the summary statistics of the data.

The following paragraphs in this section clarify that the collected data using the on-line questionnaires have no selection bias and represented the Indonesian context with regard to the employees' age, industry, and firm size (representativeness of the sample)

In terms of employees' age, based on the Indonesian Statistical Office (BPS, *Badan Pusat Statistik*) in February 2015 (see Table 2.3 (b)), fifty percent out of 120.85 million workers in Indonesia were in the age range of between 25 years old and 44 years old. Moreover, the distribution of employees starting from the range of 25 to 29 years old to the range of 40 to 44 years old was almost the same, which represents more or less 12 percent of 120.85 million workers. These data show that most of the productive workers in Indonesia were relatively young, between 25 years old and 44 years old. Compared to that, in this paper samples with relatively young employees (the range of 25- to 29-year-olds to the range of 40- to 44-year-olds) are used that make up more or less 70 percent of the valid respondents (see Table 2.3 (a)). In this case, the sample gives an average of 29.3 years old with a standard deviation of 6.8 years old (see Table 2.7 in the Appendix). However, the participation of the respondents in each of the five year ranges, starting from the range of 25-to-29-year-olds, was decreasing in percentage. They are 38.3 percent in the range of 25- to 29-year-olds; 17.7 percent in the range of 30- to 34-year-olds; 10.2 percent in the range of 35- to 39-year-olds; and, finally, 4 percent in the range of 40- to 44-year-olds. The reason for this decrease in percentage of participation as the age group increases might be because of the means of data collection, through on-line questionnaires; younger employees would be more engaged in the surveys. Nevertheless, employees' age statistics in Indonesia show that employees are relatively young. Therefore, this research has no sample bias because the sample demonstrates representativeness in the relatively young age of employees.

In terms of firm size, based on Ministry of Cooperative and Small and Medium Enterprise of Indonesia (Kemenkop&UKM, *Kementerian Koperasi dan Usaha Kecil dan Menengah*), from the year 2013 (see Table 2.10 in the Appendix), the number of total employees in small enterprises in Indonesia was 42.7 percent out of 13.06 million workers; the rest of the employees belonged to medium- and large-sized firms. This means that the proportion of employees in small firms is smaller than medium- and large-sized firms and the majority of the employees come from medium- and large-sized firms. The participation of the respondents from small enterprises in this study is also smaller than medium- and large-sized firms, 30 percent and 70 percent, respectively. The majority of the respondents also come from medium- and large-sized firms (see Table 2.7 in the Appendix).

Table 2.3 Total Employees Based on Age Range

(a) Research Data
Source: Survey Data, authors calculation

Age Range	Freq.	Percent	Cum.
15 - 19	4	0.8%	1%
20 - 24	126	24.3%	25%
25 - 29	199	38.3%	63%
30 - 34	92	17.7%	81%
35 - 39	53	10.2%	91%
40 - 44	21	4.0%	95%
45 - 49	13	2.5%	98%
50 - 54	8	1.5%	99%
55 - 59	2	0.4%	100%
60 +	1	0.2%	100%
Total	519	100%	

(b) Indonesian Reference
Source: BPS, February 2015

Age Range	Freq.	Percent	Cum.
15 - 19	5,127,144	4.2%	4%
20 - 24	12,573,327	10.4%	15%
25 - 29	14,747,924	12.2%	27%
30 - 34	15,232,177	12.6%	39%
35 - 39	15,544,090	12.9%	52%
40 - 44	14,818,707	12.3%	65%
45 - 49	13,040,254	10.8%	75%
50 - 54	10,966,756	9.1%	84%
55 - 59	8,051,516	6.7%	91%
60 +	10,744,926	8.9%	100%
Total	120,846,821	100%	

In order to consider the representativeness of respondents for each industry, this research used a proxy of industrial contribution to GDP (see Table 2.12 in the Appendix). This was used as a proxy because of the availability of data for each industry. Moreover, based on the BPS in 2015, the manufacturing industry (industry 3) made the highest contribution to Indonesia's GDP; it contributed a total of 21.02 percent. This was followed by the agriculture, forestry, and fisheries industries (industry 1) and the wholesale and retail trade industry (industry 7) which contributed a total of 13.38 percent. The mining and excavation industry and the construction industry were next. The remainder of industries contributed less than 5 percent.

With regard to the contribution of each industry to the GDP of Indonesia, this study attempts to use this parameter to consider the representativeness of the sample. Fortunately, the manufacturing industry (industry 3) had the highest participation out of 519 respondents (see Table 2.10 in the Appendix). However, this was followed by the information and communications industry, the finance and insurance industry, and the wholesale and retail trade industry. This study considers the manufacturing industry (industry 3) as the highest contributor to GDP; the other areas have a different rank when compared with industries' contribution to the national GDP.

2.4 Econometrics Method and The Tested Model

The model was developed based on the concept that individual skills can predict individual performance (Morgeson, Delaney-Klinger, and Hemingway, 2005; Motowildo, Borman, and Schmit, 1997; Luthans, Avolio, Avey, and Norman, 2007). Since innovativeness is an individual performance, this study applies a model in which innovativeness is a dependent variable which can be explained by both soft skills and hard skills, and not the other way around.

This research study uses a quantitative approach by means of multiple regression analysis. The ordinary least squares (OLS) regression model is used to analyse the relationship among variables because the dependent variable, individual innovativeness (*Innov*), is a continuous variable.

Equation (1) presents the conceptual model technically. The notations are defined as the following: *X* refers to control variables with a total of *k*, individual worker *i,* and ε is the error term.

$$Innov_i = \beta_0 + \beta_1 Soft_i + \beta_2 Hard_i + \beta_3 SoftxHard_i + \beta_j X_k + \varepsilon \quad (1)$$

This study develops three models—Model 1, Model 2, and Model 3—to check robustness at the individual level, at the firm level, and the industry level by using some control variables at each level.

Before the data was analysed using multiple regression analysis, a principal component analysis (PCA) was applied. PCA is used to check the validity of the conceptual construct or factor. There were three constructs to be analysed: *Innov*, *Hard*, and *Soft*. The following three tables show the results. Firstly, Table 2.5 (a) shows that *TechInno1*, *TechInno2*, and *TechInno3* belong to one factor which is called *TechInno* (Technical Innovativeness) with a factor loading of 0.5. Besides, NonTechInno1 and NonTechInno2 belong to one element which is called *NonTechInno* (Non-Technical Innovativeness). Secondly, Table 2.5 (b) shows that *Hard1*, *Hard2*, and *Hard3* became single factors; i.e., Hard. Thirdly, Table 2.5 (c) shows that IL, RB, TU, and PO became different factors; i.e., Soft. Furthermore, to check the reliability that each factor measures the same construct, Cronbach's Alpha is used as estimation[†]. The Cronbach's Alpha of each variable (see Table 2.6) shows that all factors fulfil the reliability thresholds; these were 0.6, 0.8, 0.7, and 0.7 for *NonTechInno*, *TechInno*, *Hard*, and *Soft* respectively.

[†]Cronbach's Alpha is the most widely used reliability measurements. A Factor with Cronbach's Alpha value of equal to and higher than 0.6 is considered to be acceptable (Peterson, 1994; Upadhyay & Baber, 2013).

Table 2.4 Principal Component Analysis

(a) *Innov*

Variable	*TechInno*	*NonTechInno*
TechInno1	0.5	-0.4
TechInno2	0.5	-0.4
TechInno3	0.5	-0.3
NonTechInno1	0.4	0.7
NonTechInno2	0.4	0.5

(b) *Hard*

Variable	*Hard*
Hard1	0.6
Hard2	0.6
Hard3	0.6

(c) *Soft*

Variable	Soft
IL	0.5
RB	0.5
TU	0.5
PO	0 .5

Table 2. 5 Cronbach's Alpha

Factor	Cronbach's Alpha
NonTechInno	0.6
TechInno	0.8
Hard	0.7
Soft	0.7

2.5 Results

The estimation results deliver that soft skills and hard skills are positively and significantly associated with Innovativeness (see Table 2.6). These results attempt to sustain H-1 and H-2. Soft skills have a stronger relationship than hard skills with innovativeness, since the coefficient of correlation is always higher in all models. For example, in Model 1 the coefficient of correlation of soft skills and innovativeness is 0.689 (99% confidence interval, $p<0.01$) whereas the coefficient of correlation of hard skills and innovativeness is 0.103 (95% confidence interval, $p<0.05$).

In order to check for robustness, this study compares three models. Model 1 applies control variables at the individual level, Model 2 applies control variables at the individual level and firm level, and Model 3 applies control variables at the individual level, firm level, and industry level. The results are robust for Model 1, Model 2, and Model 3. There is no multicollinearity in the model since all

variance inflation factors (VIF) are less than 4.00 (see Table 2.11 in the Appendix).

Model 4 shows that there is an insignificant interaction between soft skills and hard skills (*SoftxHard*) with innovativeness – hypotheses H-3. That implies that an employee who has both a high level of soft skills and hard skills will not necessarily have a high level of innovativeness. An employee can have higher soft skills with lower hard skills, or the other way around, in order to have higher innovativeness. Model 4 uses all control variables at the individual level, firm level, and industry level.

Table 2.6 Regression Model (Part 1 of 2)

Model	**1**	**2**	**3**	**4**
	Innov	***Innov***	***Innov***	***Innov***
Soft	0.689***	0.651***	0.642***	0.581***
	(0.0427)	(0.0428)	(0.0432)	(0.156)
Hard	0.103**	0.0855*	0.0773*	0.0378
	(0.0467)	(0.0466)	(0.0467)	(0.107)
SoftxHard				0.0148
				(0.0360)
Control Variables:				
Individual level				
Job_LowMan	0.00145	0.00292	0.0104	0.0125
	(0.0939)	(0.0933)	(0.0947)	(0.0949)
Job_MedMan	0.148*	0.143*	0.179**	0.178**
	(0.0847)	(0.0838)	(0.0856)	(0.0858)
Job_HighMan_Owner	0.530***	0.361***	0.404***	0.402***
	(0.110)	(0.121)	(0.123)	(0.123)
EmpAge	0.000432	-0.000938	0.00158	0.00161
	(0.00665)	(0.00669)	(0.00675)	(0.00676)
WorkingPeriod	0.00198	0.00556	0.00325	0.00326
	(0.00814)	(0.00820)	(0.00827)	(0.00828)
Female	-0.00435	-0.0565	-0.0347	-0.0340
	(0.0627)	(0.0641)	(0.0643)	(0.0644)
JuniorHigh	0.702*	0.572	0.538	0.548
	(0.410)	(0.410)	(0.410)	(0.411)
SeniorHigh	0.144	0.0742	0.0568	0.0610
	(0.107)	(0.108)	(0.108)	(0.109)
University	-0.0979	-0.0996	-0.0707	-0.0698
	(0.0889)	(0.0890)	(0.0897)	(0.0898)
Constant	0.399			
	(0.249)			
Observations	519			
R-squared	0.543			
Adjusted R-squared	0.533			

Notes: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Table 2.6 Regression Model (Part 2 of 2)

Model	**1**	**2**	**3**	**4**
	Innov	***Innov***	***Innov***	***Innov***
Firm Level				
R&Dactivities		0.168**	0.153*	0.156*
		(0.0831)	(0.0852)	(0.0856)
R&D_Department		0.196	0.170	0.169
		(0.127)	(0.128)	(0.129)
Marketing_Department		0.253***	0.235***	0.233***
		(0.0851)	(0.0885)	(0.0887)
HR_Department		-0.000826	-0.0467	-0.0470
		(0.106)	(0.110)	(0.110)
ICT_Department		0.0333	0.0273	0.0235
		(0.112)	(0.116)	(0.116)
Finance_Department		-0.0866	-0.0930	-0.0944
		(0.0986)	(0.101)	(0.102)
Board of Directors		0.771***	0.700***	0.686***
		(0.242)	(0.244)	(0.246)
MediumFirm		-0.195**	-0.176*	-0.178*
		(0.0926)	(0.0978)	(0.0979)
LargeFirm		-0.130	-0.122	-0.127
		(0.0817)	(0.0892)	(0.0899)
FirmResGroup2		0.121	0.121	0.123
		(0.103)	(0.111)	(0.111)
FirmResGroup3		0.290**	0.272**	0.273**
		(0.115)	(0.124)	(0.124)
Industry Level	**No**	**No**	**Yes**	**Yes**
Constant		0.521**	0.542**	0.701
		(0.263)	(0.272)	(0.473)
Observations		519	519	519
R-squared		0.578	0.600	0.600
Adjusted R-squared		0.560	0.568	0.567

Notes: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

This study used the Wald test on sets of dummies to check whether each set of dummies played a role. In principle, each set of dummies played a role; the null hypotheses that each dummy is equal to zero can be rejected since the F test give a significant value (F (35, 479) =2.92 with Prob > F =0.0000).

At the individual level control variables, the job level of high-level management or owner always have a positive and significant relationship with innovativeness. Research and development activities, marketing department, and board of directors control variables at the firm level also always have the same positive and significant relationship with innovativeness.

The results show evidence to support H-1 and H-2, using the OLS model based on 519 individual-level pieces of data. The findings indicate that soft skills

and hard skills are positively and significantly associated with innovativeness. However, there is no evidence to support H-3, since the results show that there is an insignificant interaction between soft skills and hard skills with innovativeness. The rejection of H-3 might have occurred because all measurements were based on the Likert scale. Russel and Bobko (1992) found that the use of a Likert scale in the questionnaire decreases the probability of distinguishing interaction effects.

2.6 Conclusion

The results show that soft skills and hard skills are significantly and positively associated with innovativeness. Soft skills consist of some variables such as innovation leadership (IL), relationship building (RB), tolerance for uncertainty (TU), and passion and optimism (PO); whereas, hard skills consist of factors such as ICT skills, tools and equipment skills, and learning and conceptual skills. Therefore, all of these particular skills should be developed to increase workers' innovativeness.

There is no interactive relationship between soft skills and hard skills with innovativeness. In this case, a worker who has both a high level of soft skills and hard skills will not necessarily have a high level of innovativeness. Increasing soft skills and hard skills of employees could increase the employees' innovativeness. In this case, an employee can have higher soft skills with lower hard skills, or the other way around, in order to have higher innovativeness. It is not necessary to have higher levels of both soft skills and hard skills.

There are some limitations of this study such as: (1) this study applies cross-sectional data. Hence, the tested model can only show association instead of causal-effect between the independent variable and the dependent variable; (2) the total number of respondents to the on-line survey for each representative firm was limited to only those who operate computers and the internet. In addition, besides younger employees would be more engaged in the surveys, employees who have tertiary level education degree (academy/diploma and university) would also be more engaged in the surveys. In this study, almost 80% of the respondents have tertiary level education degree. The senior high school and junior high school degrees are in second place and third place, with more or less 20% and 1%, respectively. The education level categories in this study – starting from the junior high school degree – can represent the education level category of Indonesia but the categories cannot represent the total employees for each category. Because, based on the BPS in February 2015 (see Table 2.14 in the Appendix), the senior high school degree was the education level achieved by the highest number of employees in the private and public sector in Indonesia, with a total of more or less 18 million employees. Moreover, university and junior high school degrees

were in second and third place, with 8.36 million and 7.58 million, respectively; and (3) the generality of the findings might be valid only for firms in Indonesia.

Further research studies are needed. The study could be conducted in different countries to discover comparisons. The results might be different for developed countries, where innovation is supported by incentives for research and development in advanced technologies and patenting is a common way to develop innovation economics. A longitudinal study should be carried out to understand the causal effect of soft skills and hard skills on individual innovativeness.

This study becomes a first step providing some suggestions which could then be used as basis for studies which try to establish causal-effects relationship between soft skills and hard skills and individual innovativeness which then can be used for practical and policy recommendations.

Soft skills and hard skills are significantly and positively associated with innovativeness. There is no interactive relationship between soft skills and hard skills with innovativeness. If the causal-effect relationships are hold true, firms should develop trainings for both types of skills, hard skills and soft skills. Firms can have mixed employees composed of people who only have high soft skills and people who only have high hard skills because there is no interaction effect between soft skills and hard skills with innovativeness. In this case, a worker who has both a high level of soft skills and hard skills will not necessarily have a high level of innovativeness.

2.7 Appendices

Table 2.7 Summary Statistics

No.	Variable	Obs	Mean	Std. Dev.	Min	Max
1	*Soft*	519	3.31	0.90	1	5
2	*Hard*	519	4.04	0.79	1	5
3	*Innov*	519	3.17	1.01	1	5
4	*R&Dactivities*	519	0.72	0.45	0	1
5	*Job_Staff*	519	0.55	0.50	0	1
6	*Job_LowMan*	519	0.14	0.34	0	1
7	*Job_MedMan*	519	0.21	0.41	0	1
8	*Job_HighMan_Owner*	519	0.10	0.30	0	1
9	*EmpAge*	519	29.30	6.85	18	61
10	*WorkingPeriod*	519	4.80	5.63	0	42
11	*Female*	519	0.43	0.50	0	1
12	*JuniorHigh*	519	0.01	0.08	0	1
13	*SeniorHigh*	519	0.20	0.40	0	1
14	*Academy*	519	0.15	0.35	0	1
15	*University*	519	0.65	0.48	0	1
16	*Operation_Dept.*	519	0.26	0.44	0	1
17	*R&D_Dept.*	519	0.07	0.26	0	1
18	*Marketing_Dept.*	519	0.27	0.45	0	1
19	*HR_Dept.*	519	0.18	0.33	0	1
20	*ICT_Dept.*	519	0.10	0.30	0	1
21	*Finance_Dept.*	519	0.15	0.36	0	1
22	*BOD*	519	0.02	0.14	0	1
23	*SmallFirm*	519	0.30	0.46	0	1
24	*MediumFirm*	519	0.22	0.41	0	1
25	*LargeFirm*	519	0.48	0.50	0	1
26	*FirmResGroup1*	519	0.76	0.43	0	1
27	*FirmResGroup2*	519	0.11	0.31	0	1
28	*FirmResGroup3*	519	0.14	0.34	0	1

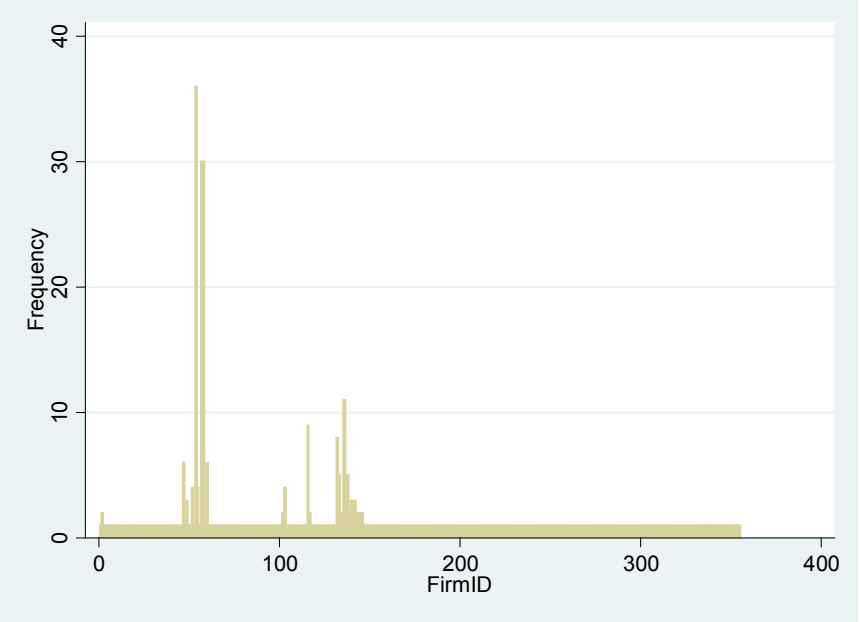

Figure 2. 1 Number of Individual-Respondent for Each Firm out of 355 Firms

Notes: Figure 2.1 shows the distribution of the individual-respondent in each firm (*FirmID*). The respondents come from 355 different firms. Therefore, there are 355 *FirmID*. The highest total respondent in a firm is 36 respondents. Most of the firm-sample contributes only one respondent. However, the survey provides 519 respondents (individual-level data).

Table 2.8 Correlation (a)

Variable ID	Variable Name	Variable ID															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	*Soft*	1.0000															
2	*Hard*	0.5367*	1.0000														
3	*Job_LowMan*	-0.0732	-0.0071	1.0000													
4	*Job_MedMan*	0.1873*	0.1263*	-0.2024*	1.0000												
5	*Job_HighMan_Owner*	0.2460*	0.1179*	-0.1332*	-0.1729*	1.0000											
6	*EmpAge*	0.1984*	0.0476	-0.0282	0.2299*	0.1488*	1.0000										
7	*WorkingPeriod*	0.2018*	0.0726	-0.0254	0.1908*	0.0977*	0.7171*	1.0000									
8	*Female*	-0.0371	0.0375	-0.0609	-0.0941*	-0.0254	-0.1967*	-0.1305*	1.0000								
9	*JuniorHigh*	0.0083	-0.1094*	-0.0301	-0.0391	-0.0257	0.0301	0.0117	0.0359	1.0000							
10	*SeniorHigh*	0.0281	-0.1269*	-0.0675	-0.0982*	-0.0707	0.0370	0.2266*	-0.0315	-0.0377	1.0000						
11	*University*	-0.0041	0.1324*	0.1232*	0.1261*	0.0732	-0.0037	-0.1724*	0.0201	-0.1042*	-0.6759*	1.0000					
12	*RD*	0.0386	0.1531*	0.1201*	0.1499*	-0.0311	0.0213	-0.0357	-0.0879*	0.0475	-0.2540*	0.2111*	1.0000				
13	*Department2*	-0.0234	0.0405	0.0660	0.0055	-0.0687	0.0009	-0.0017	0.0145	-0.0211	-0.0240	0.0613	0.1058*	1.0000			
14	*Department3*	0.1109*	0.0375	-0.0493	0.0414	-0.0043	-0.0992*	-0.0594	0.1428*	-0.0463	0.1364*	-0.0471	-0.0570	-0.1684*	1.0000		
15	*Department4*	0.0387	0.1071*	0.0694	0.0608	0.0241	0.1277*	0.0790	-0.0655	-0.0291	-0.0869*	0.1580*	0.0314	-0.1058*	-0.2320*	1.0000	
16	*Department5*	-0.0338	-0.0557	0.0023	-0.0576	-0.0044	-0.0884*	-0.0691	-0.0667	-0.0252	-0.0655	0.0514	0.0469	-0.0915*	-0.2006*	-0.1260*	1.0000
17	*Department6*	-0.1114*	0.0004	-0.0280	-0.0348	-0.0559	-0.0555	-0.0469	0.1542*	-0.0325	-0.0903*	-0.0123	-0.0077	-0.1183*	-0.2595*	-0.1629*	-0.1409*
18	*Department7*	0.1430*	0.1234*	-0.0581	-0.0754	0.4363*	0.1637*	0.0336	0.0332	-0.0112	-0.0391	0.0235	0.0618	-0.0408	-0.0894*	-0.0562	-0.0486
19	*MediumFirm*	-0.0770	-0.1068*	-0.0990*	0.0056	-0.0546	-0.0547	-0.0404	0.0284	-0.0402	0.0915*	-0.1136*	-0.1189*	0.0353	-0.0682	-0.0052	-0.0016
20	*LargeFirm*	-0.0112	0.0713	0.1663*	0.0773	-0.2283*	0.0936*	0.1587*	-0.0320	-0.0746	-0.1059*	0.0937*	0.1887*	0.0283	-0.0740	0.1006*	0.0135
21	*FirmResGroup2*	-0.0242	0.0258	0.0473	0.0240	-0.0334	-0.0637	-0.0320	0.0525	0.1389*	-0.1230*	0.0286	0.2144*	-0.0224	-0.0541	0.1504*	-0.0295
22	*FirmResGroup3*	0.1364*	-0.0162	-0.1408*	-0.0936*	-0.0417	0.0135	0.1613*	0.1383*	-0.0304	0.2970*	-0.3087*	-0.5019*	-0.0449	0.0360	-0.0173	-0.0372
23	*Industry1*	-0.0820	-0.0708	0.0666	-0.0034	0.0178	-0.0093	-0.0523	-0.0349	-0.0132	-0.0564	0.0780	-0.0207	-0.0031	-0.0530	0.0377	0.0203
24	*Industry2*	-0.0599	0.0609	0.0678	-0.0028	-0.0473	-0.0328	-0.0475	-0.0378	-0.0107	0.0365	0.0143	0.0873*	0.0701	-0.0220	0.1569*	-0.0463
25	*Industry4*	0.0003	0.0085	0.0202	-0.0425	-0.0496	-0.0339	0.0099	-0.0477	-0.0112	-0.0054	-0.0607	0.0618	0.0112	0.0010	0.0643	0.0413
26	*Industry5*	-0.0536	0.0002	-0.0173	0.0857	-0.0148	-0.0276	-0.0297	0.0502	-0.0034	-0.0217	0.0322	0.0274	-0.0122	-0.0267	-0.0168	-0.0145
27	*Industry6*	-0.0479	-0.0713	-0.0271	-0.0136	-0.0394	-0.0359	-0.0539	-0.0490	-0.0160	0.0403	-0.0066	0.0031	-0.0211	-0.0417	0.0345	-0.0052
28	*Industry7*	0.0105	0.0009	-0.0142	0.0900*	0.0193	-0.0135	-0.0287	-0.0353	-0.0249	-0.0136	0.0471	-0.0878*	-0.0651	0.2282*	-0.0854	-0.0858
29	*Industry8*	-0.0103	0.0441	0.0621	0.0393	0.0276	0.0338	-0.0172	-0.0021	-0.0157	-0.0770	0.0887*	0.0625	0.0571	-0.1028*	0.2151*	-0.0021
30	*Industry9*	0.0016	0.0406	0.0039	-0.0854	0.1010*	-0.0265	-0.0677	-0.0257	-0.0127	-0.0524	-0.0279	0.0507	-0.0461	0.0864*	-0.0279	-0.0550
31	*Industry10*	0.0210	0.0398	-0.0586	0.0622	-0.0087	-0.0428	0.0060	-0.0125	-0.0257	-0.0547	0.0732	0.0824	0.0055	-0.0903*	0.0432	0.2734*
32	*Industry11*	-0.0986*	0.0315	-0.0052	-0.0814	-0.1149*	-0.0843	-0.0802	0.0584	-0.0260	-0.0891*	0.0640	0.1278*	-0.0699	0.0346	-0.0732	-0.0489
33	*Industry12*	-0.0701	-0.0466	0.0188	-0.0020	0.0319	0.0043	-0.0036	-0.0067	-0.0075	-0.0488	0.0308	0.0174	-0.0273	-0.0155	-0.0376	0.0337
34	*Industry13*	-0.0589	-0.0262	0.1409*	-0.0136	0.0238	-0.0149	-0.0879*	-0.0104	-0.0160	-0.0800	0.0737	0.0671	0.1275*	-0.0201	-0.0229	0.0912*
35	*Industry14*	0.0481	0.0547	-0.0092	-0.0317	0.0039	-0.0361	-0.0138	-0.0566	-0.0101	0.0829	-0.0576	-0.0160	-0.0368	0.0523	0.0822	0.0057
36	*Industry15*	0.0037	0.0013	-0.0092	-0.0317	0.0039	0.0200	-0.0754	0.0625	-0.0101	-0.0657	0.0662	0.0498	0.0206	-0.0142	-0.0507	0.0057
37	*Industry16*	-0.0007	-0.0243	-0.0036	-0.0256	-0.0422	-0.0764	-0.0443	0.0483	-0.0095	-0.0225	0.0587	0.0082	0.0261	0.0649	-0.0478	0.0112
38	*Industry17*	-0.0253	-0.0138	-0.0440	0.0066	0.0404	0.0671	0.0066	0.0042	-0.0145	-0.0142	-0.0160	0.0241	-0.0116	0.0034	0.0541	-0.0626
39	*Industry18*	0.0195	-0.0123	-0.0232	-0.0157	0.1175*	-0.0293	-0.0266	0.0206	-0.0117	0.0207	0.0050	-0.0185	-0.0426	0.0509	-0.0587	-0.0077

Notes: * significant at minimum 5%

Table 2.8 Correlation (b)

Variable ID	Variable Name	Variable ID 17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
17	***Department6***	1.0000															
18	***Department7***	-0.0628	1.0000														
19	***MediumFirm***	0.0592	-0.0128	1.0000													
20	***LargeFirm***	0.0304	-0.1441*	-0.5165*	1.0000												
21	***FirmResGroup2***	0.0091	0.0363	-0.1665*	0.1388*	1.0000											
22	***FirmResGroup3***	0.0319	-0.0197	0.1976*	0.0701	-0.1371*	1.0000										
23	***Industry1***	-0.0418	-0.0254	-0.0074	0.0382	-0.0594	-0.0687	1.0000									
24	***Industry2***	-0.0210	-0.0206	0.0619	0.0030	-0.0483	-0.0558	-0.0242	1.0000								
25	***Industry4***	-0.0628	-0.0217	-0.0452	0.0968*	0.2101*	-0.0586	-0.0254	-0.0206	1.0000							
26	***Industry5***	0.1029*	-0.0065	-0.0232	0.0449	-0.0151	-0.0175	-0.0076	-0.0062	-0.0065	1.0000						
27	***Industry6***	-0.0368	-0.0310	-0.0647	-0.0721	-0.0724	-0.0838	-0.0363	-0.0295	-0.0310	-0.0092	1.0000					
28	***Industry7***	0.0234	-0.0480	0.0176	-0.1106*	-0.1124*	-0.1300*	-0.0563	-0.0458	-0.0480	-0.0143	-0.0687	1.0000				
29	***Industry8***	-0.0335	-0.0302	0.0101	0.0924*	0.1835*	-0.0817	-0.0354	-0.0288	-0.0302	-0.0090	-0.0432	-0.0670	1.0000			
30	***Industry9***	-0.0381	0.1406*	0.0562	-0.0678	-0.0573	-0.0663	-0.0287	-0.0233	-0.0245	-0.0073	-0.0350	-0.0544	-0.0342	1.0000		
31	***Industry10***	-0.1263*	-0.0054	-0.0700	-0.0247	-0.0127	0.0509	-0.0582	-0.0473	-0.0496	-0.0148	-0.0710	-0.1101*	-0.0693	-0.0562	1.0000	
32	***Industry11***	0.2390*	-0.0501	-0.0727	0.1966*	0.2312*	-0.1173*	-0.0588	-0.0478	-0.0501	-0.0150	-0.0717	-0.1113*	-0.0700	-0.0567	-0.1149*	1.0000
33	***Industry12***	0.0672	-0.0145	0.0436	-0.0571	-0.0340	-0.0393	-0.0170	-0.0138	-0.0145	-0.0043	-0.0208	-0.0322	-0.0203	-0.0164	-0.0333	-0.0336
34	***Industry13***	-0.0368	0.0354	0.0976*	-0.1295*	-0.0724	-0.0838	-0.0363	-0.0295	-0.0310	-0.0092	-0.0443	-0.0687	-0.0432	-0.0350	-0.0710	-0.0717
35	***Industry14***	-0.0567	-0.0195	-0.0701	-0.0710	-0.0457	-0.0529	-0.0229	-0.0186	-0.0195	-0.0058	-0.0279	-0.0434	-0.0273	-0.0221	-0.0448	-0.0453
36	***Industry15***	0.0250	-0.0195	0.0014	-0.1301*	-0.0457	-0.0529	-0.0229	-0.0186	-0.0195	-0.0058	-0.0279	-0.0434	-0.0273	-0.0221	-0.0448	-0.0453
37	***Industry16***	-0.0534	-0.0184	0.0477	-0.0599	-0.0431	-0.0498	-0.0216	-0.0175	-0.0184	-0.0055	-0.0263	-0.0409	-0.0257	-0.0208	-0.0422	-0.0426
38	***Industry17***	-0.0518	0.1183*	0.1552*	-0.1434*	-0.0653	-0.0755	-0.0327	-0.0266	-0.0279	-0.0083	-0.0399	-0.0619	-0.0389	-0.0316	-0.0639	-0.0646
39	***Industry18***	-0.0302	0.0664	-0.0190	-0.1250*	-0.0530	-0.0612	-0.0265	-0.0216	-0.0226	-0.0068	-0.0324	-0.0502	-0.0316	-0.0256	-0.0519	-0.0524

Notes: * significant at minimum 5%

Table 2.8 Correlation (c)

Variable ID	Variable Name	Variable ID 32	33	34	35	36	37	38	39
32	***Industry11***	1.0000							
33	***Industry12***	-0.0336	1.0000						
34	***Industry13***	-0.0717	-0.0208	1.0000					
35	***Industry14***	-0.0453	-0.0131	-0.0279	1.0000				
36	***Industry15***	-0.0453	-0.0131	-0.0279	-0.0176	1.0000			
37	***Industry16***	-0.0426	-0.0123	-0.0263	-0.0166	-0.0166	1.0000		
38	***Industry17***	-0.0646	-0.0187	-0.0399	-0.0252	-0.0252	-0.0237	1.0000	
39	***Industry18***	-0.0524	-0.0152	-0.0324	-0.0204	-0.0204	-0.0192	-0.0292	1.0000

Notes: * significant at minimum 5%

Table 2.9 Variance Inflation Factor (VIF) of the Model (3): Multicollinearity Checking*)

Variable	VIF	1/VIF	Variable	VIF	1/VIF
WorkingPeriod	2.56	0.39	*FirmResGroup2*	1.39	0.72
EmpAge	2.52	0.40	*Department2*	1.29	0.77
LargeFirm	2.35	0.42	*Industry13*	1.27	0.79
SeniorHigh	2.20	0.45	*Job_LowMan*	1.24	0.81
University	2.16	0.46	*Industry8*	1.24	0.801
FirmResGroup3	2.15	0.46	*Industry17*	1.21	0.83
MediumFirm	1.93	0.52	*Industry6*	1.20	0.83
Department3	1.82	0.55	*Female*	1.20	0.83
Soft	1.78	0.56	*Industry9*	1.19	0.84
RD	1.73	0.58	*Industry2*	1.17	0.86
Job_HighMan_Owner	1.63	0.61	*Industry4*	1.15	0.87
Hard	1.61	0.62	*JuniorHigh*	1.14	0.87
Department4	1.60	0.63	*Industry15*	1.14	0.87
Department6	1.59	0.63	*Industry14*	1.13	0.88
Industry11	1.48	0.67	*Industry1*	1.13	0.88
Department7	1.46	0.68	*Industry18*	1.13	0.88
Industry7	1.43	0.70	*Industry16*	1.09	0.91
Job_MedMan	1.43	0.70	*Industry12*	1.06	0.94
Department5	1.40	0.71	*Industry5*	1.04	0.96
Industry10	1.40	0.71	Mean VIF	1.50	

*) No multicollinearity if the VIF of each variable is less than 4.00

Table 2.10 Indonesia Reference: Total Employees based on Firm Size

All Industries	Total Employees			
	Small	**Medium**	**Large**	**Total**
Freq.	5.570.231	3.949.385	3.537.162	13.056.778
Percent	42,7%	30,2%	27,1%	100%

Source: Kemenkop&UKM, 2013.

Table 2.11 Total Respondents based on Firm Size and Industry

Firm Size	Industry																		Total	Percent
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**		
Small	3	1	36	1	0	13	22	1	5	22	5	2	9	7	7	3	6	9	152	29.3%
Medium	3	4	39	1	0	2	12	5	5	7	7	2	9	0	2	3	10	2	113	21.8%
Large	9	5	110	9	1	7	16	15	4	24	42	1	4	2	0	2	2	1	254	48.9%
Freq.	15	10	185	11	1	22	50	21	14	53	54	5	22	9	9	8	18	12	519	100.0%
Percent	2.9%	1.9%	35.6%	2.1%	0.2%	4.2%	9.6%	4.0%	2.7%	10.2%	10.4%	1.0%	4.2%	1.7%	1.7%	1.5%	3.5%	2.3%	100.0%	
Cum.	2.9%	4.8%	40.5%	42.6%	42.8%	47.0%	56.6%	60.7%	63.4%	73.6%	84.0%	85.0%	89.2%	90.9%	92.7%	94.2%	97.7%	100.0%		

Source: Authors Calculation

Table 2.12 Indonesia Reference: Total Industrial Contribution to the Total GDP (2014)

Code		Industry	Contribution to GDP in Percentage
A	1	Agriculture, Forestry and Fisheries	13.38
B	2	Mining and Excavations	9.82
C	3	Manufacture	21.02
D	4	Procurement Electricity, Gas, Steam / Hot and Cold Air	1.08
E	5	Water Supply, Waste Management and Recycling, Cleaning and Waste Disposal	0.07
F	6	Construction	9.88
G	7	Wholesale and Retail Trade; Car and Motorcycles Repair and Car	13.38
H	8	Transportation and Warehousing	4.27
I	9	Accommodations, Food and Beverages	3.14
J	10	Information and Communication	3.50
K	11	Finance and Insurance	3.88
L	12	Real Estate	2.79
M	13	Professional, Scientific and Technical Services	0.80
N	14	Rental Services, Employment, Travel Agencies and Supporting Other Businesses	0.77
P	15	Education Services	3.29
Q	16	Health Services and Social Activities	2.03
R,S,T,U	17	Culture, Entertainment and Recreation	2.00
	18	The Other Services: Reparation, Personal and Household Services	1.55
O		Administration, Defence, and Social Security*	3.84
		Total	100.00

Source: Statistical Yearbook of Indonesia 2015, page 579.
*note: there is no respondent that can represent this industry

Table 2.13 Private/Public Employment with the Highest Education Degree – Starting from Junior High School

Employment Status	Highest Education Degree, starting from Junior High School						
Private/Public Employment	**Junior High School**	**Senior High School**	**Academy/Diploma**	**University**	**Total**	**Non - Tertiary Education**	**Tertiary Education**
Freq.	7,575,075	18,052,843	2,416,208	8,357,803	36,401,929	28,044,126	8,357,803
Percent	20.8%	49.6%	6.6%	23.0%	100%	77.0%	23.0%
Cum.	20.8%	70.4%	77.0%	100.0%			

Source: BPS, February 2015

Table 2.14 Education and Employment Status in Indonesia

Employment Status	Highest Education Degree							
	No Education	**Not Completing the Elementary School**	**Elementary School**	**Junior High School**	**Senior High School**	**Academy/ Diploma**	**University**	**Total**
Self-Employment	2,629,123	9,105,906	14,192,788	7,817,737	9,027,789	559,093	1,329,965	44,662,401
Private/Public Employment	350,490	2,892,179	6,972,936	7,575,075	18,052,843	2,416,208	8,357,803	46,617,534
Freelance, Agriculture	448,522	1,678,806	1,982,435	656,985	297,083	2.922	9.260	5.076.013
Freelance, Non-Agriculture	136,569	1,172,385	2,760,107	1,651,200	1,038,193	14,753	29,921	6,803,128
Family Workers/Unpaid	1,358,935	3,302,478	5,624,763	3,771,824	3,188,739	147,115	293,891	17,687,745
Total	4,923,639	18,151,754	31,533,029	21,472,821	31,604,647	3,140,091	10,020,840	120,846,821

Source: BPS, February 2015

Chapter 3
The Attractiveness of Regional Knowledge and Entrepreneurship for Migration

3.1 Introduction

Entrepreneurship and migration are two concepts that deal with regional economics and are related to people as actors. No research so far has analysed if the level of entrepreneurial activities in a region can induce people to migrate there. The presence of a large number of small companies in a region is an indication that it offers a good environment in which to establish new firms, most of which are usually small in size. Entrepreneurial activities in a region are important because they present economic alternatives for earning money. One of the supporting factors of a region for entrepreneurial activities is knowledge. Knowledge is important for people to succeed economically. The aim of this study is to address the identified research gap and to examine the region-specific factors – specifically entrepreneurship and knowledge – that can become determinant factors of the location choice in regional migration. This study has a research question: Are knowledge and entrepreneurship significant determinant variables of regional choice in regional migration?

Migration deals with individuals' choice of location. Davies, Greenwood, and Li (2001) adopt a conditional logit approach to identify the effect of relative economic prospects indicators (e.g. unemployment rate and income per capita) and cost-of-moving-related distance on migration. In addition, some individual characteristics can determine the location choices of migrants, such as language proficiency (Bauer, Epstein, & Gang, 2005). Therefore, destination regions' specific features and migrants' personal characteristics can influence their location decisions. Some regions attract migrants because of their economic development. Migrants have their own personal consideration as well as a more general

perception based on the region's economic condition. They compare various destination regions, including their current region.

The chapter proceeds as follows. Section 3.2 elaborates on the previous studies regarding the determinants of the choice of a region as destination. Moreover, this section explains the arguments and the literature concerning knowledge and entrepreneurship in relation to the choice of a region. Section 3.3 describes the data that are used in this study. The data are individual-level data on regional migration in Indonesia and regional data of Indonesia. In addition, the variable definitions are presented in this section. Section 3.4 explains the alternative-specific conditional logit model and the econometric settings. Section 3.5 presents the findings and a further analysis based on several models. Finally, section 3.6 discusses and summarizes the findings, describes the limitation of the study, and provides some further study suggestions and possible policy implications.

3.2 Literature and Hypotheses

Fafchamps and Shilpi (2013) examine the determinants of the choice of destination in the Nepalese migration case. They find some significant determinants, such as income differentials across possible regions (positive but not significant when controlled for other variables), differences in distance (negative), differences in population density (positive), similarities in ethnicity and language (positive), and differences in access to facilities and the price of rice (negative). Additionally, Funkhouser and Ramos (1993) study Dominican and Cuban immigrants to the US and Puerto Rico. They use the multinomial logit model and find that some individual characteristics (such as skills, education, and occupation) play a role in the location choice.

This research tries to examine other region-specific variables in the regional migration context, specifically those related to knowledge and entrepreneurship. However, some important explanatory variables that are considered in previous studies by other researchers are still included as control variables and for discussion purposes.

Education is related to social outcomes, one of which is knowledge (Kingston, Hubbard, Lapp, Schroeder, & Wilson, 2003). Knowledge is essential not only for the job career through developing competence but also for businesses' motivation. The competence motivation might be suitable for young people who still need school or university education, and the reason to build and develop a business might apply to older people who do no longer need to follow the learning process in an educational institution but need knowledge to support their business or professional job. In the regional context, they seek education that

is provided by the region. Therefore, the education index can be seen as a proxy for the knowledge level of a region.

Hypothesis 1 The education index of a region is positively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus.

Entrepreneurship is the process of creation or development of new enterprises. These can be large firms or small and medium enterprises (SMEs). Most of entrepreneurs start with micro or small businesses. These companies, created in the entrepreneurship process, can make an economic contribution. In addition, Acs and Audretsch (1993) elaborate on the contributions from the Schumpeterian point of view, such as the job creation contribution, innovation activities, and so on. Entrepreneurship has a spatial or a regional dimension. Keeble (1997) explains that small enterprises perform differently in each region. It can be argued that business people search for a region that has a larger number of small companies because the region can support the companies' activities, e.g. because of infrastructure for supply chain, inter-firm business networks, etc. Therefore, there are reasons for the hypothesis that the number of small enterprises in a region, as a proxy for entrepreneurship, is positively associated with the likelihood of that region being chosen by migrants as a migration destination.

Hypothesis 2 The number of micro and small enterprises in a region is positively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus.

3.3 Data

This research applies two sources of secondary data sets, the Indonesian Family Life Survey (IFLS) and the Statistics Indonesia (*Badan Pusat Statistik* – BPS). The IFLS is a longitudinal individual, family, and community survey in Indonesia that shows migration histories and migrant characteristics. Five waves of the survey have been conducted by *RAND* in collaboration with *Lembaga Demografi* of the University of Indonesia: IFLS-1 in 1993, IFLS-2 in 1997, IFLS-3 in 2000, IFLS-4 in 2007, and IFLS-5 in 2014/2015. The IFLS-5 2014/2015 wave is used for this research.

In the IFLS-5 data sets, there are 2,313 observations that consist of individuals who have experienced migration at least once in the period between 1957 and 2015.This study uses the 5-year period 2010–2014 (based on Fafchamps & Shilpi, 2013) restricting the focus on those individuals who have migrated in that period. The reason for this restriction is that this is the most actual data of the

IFLS. Moreover, the combination of the destination regions and the individuals' sample provides a subset of data that represents the regions of Indonesia. Therefore, 936 individuals who did not migrate in that period have to be dropped reducing the number to 1,377 migrants in the period 2010-2014. This study only uses the last migration event of each individual who migrated in that period. Therefore, 461 further observations have to be dropped. Finally, the total migrants to be observed are 916 individuals (1,377 minus 461 equals 916) who migrate for the last time in the period 2010–2014. There are 18 alternative region choices. Therefore, in this research there are 16,488 observations constituting the sample, meaning 916 individuals facing 18 alternative regions – 916 individuals times 18 alternative regions equals 16,488 observations.

The region choice decision of the last migration event is determined by the destination-specific conditions and the individuals' characteristics when they migrate. The data on the individuals' characteristics are restricted: there are no information on some individual characteristics (e.g., the number of children, marital status, and level of education), because the survey was conducted when the migrants had already moved to the destination region. Some of the individual characteristics, available in the data sets, become explanatory or control variables in the model. These variables are the migrants' experience of moving (*movenumber*) and the purpose of migration (e.g. to find a job (*purposejob*)). The migrants' experience of migrating, which is reflected by the number of migration events, captures their experience in deciding on the destination region. Migrants have a purpose in migration, based on which they will choose a region.

Moreover, this research uses 2010–2014 secondary data from the BPS to examine the region-specific characteristics related to education, the unemployment rate, and entrepreneurship in terms of micro and small enterprises. With regards to education, educational attainment or years of schooling are used by Kingston et al. (2003) to measure education. Moreover, the UNDP (United Nations Development Programme) is used to measure the education index as part of the human development index. Recently, it has been measured by two variables, namely expected years of schooling and mean years of education. The same method is used by the BPS. For summary statistics see Table 3.4 in the Appendix.

3.4 Method

The model used by this research to show the regional choice in regional migration is the alternative-specific conditional logit model based on McFadden (1974). This model can predict the likelihood or probability of an individual choosing an alternative, given some possible alternatives, based on a factor or a determinant condition (explanatory variable) that can describe the alternatives. Moreover, this model can include some individual characteristics that influence

the choice. One alternative is determined as the base alternative. Based on empirical data, the model can then show which explanatory variables can significantly (positively or negatively) influence the likelihood or probability of the alternative being chosen. For example, if there are five alternatives, each individual will be faced with the five alternatives and will then (with his or her personal characteristics) choose only one of the five alternatives. The likelihood of that alternative being selected can then be derived, considering all the explanatory variables that can describe the alternatives. An explanatory variable influences the decision with the assumption that the other explanatory variables remain constant (ceteris paribus).

This region choice model assumes the independence of irrelevant alternatives (IIA). In this case the IIA implies that the probability of choosing the destination region is independent of the existence of other alternative destination regions, because every region has unique characteristics (e.g. explanatory variables such as the education index, income per capita, etc.). When explanatory variables influence the decision (ceteris paribus), this does not mean that the IIA assumption is violated because then it gives a unique probability of the choices to be chosen by the migrants. Therefore, if the assumption of the IIA holds for this model, there is no problem of the IIA in the context of this study. The IIA therefore will not be discussed in this study.

The regional choice migration model in this study is the alternative conditional logit model, which uses the determinant variables X_{iop} and Z_{io} as explanatory variables to predict the dependent variable Y_{iop}. Y_{iop} is the likelihood of individual *i* migrating from origin *o* to alternative destination region *p.* The data are structured as pairwise combinations of each individual *i* who lives in origin region *o* with each alternative destination region *p*. The conditional logit model is developed by *p* equations that describe *p* alternatives for each individual *i*. The dependent variable Y_{iop} is equal to one if migrant *i* chooses region *p* as a destination, and it is equal to zero otherwise. The model then calculates the probability of individual *i* choosing each *p* alternative given the pairwise comparison of the determinant variables between destination region *p* and origin region *o.* The model gives a predicted choice probability value of Y_{iop} that ranges between 0 and 1.

The model is described by model M1, where X_{iop} represents determinant variables that vary across alternative region choices *p*, Z_{io} represents the characteristics of individuals *i* that are constant across alternative region choices, and ε is the error term

$$Y_{iop} = X_{iop}\,\beta_j + Z_{io}\,\gamma_p + \varepsilon \qquad \text{(M1)}$$

This study aims to examine the sign of the slope β_j (i.e. positive or negative) and the significance level of the slope β_j where *j* is the index for each slope of X_{iop} (j=1, 2,…). The determinant variables are calculated based on the following equations (1) to (5.4). The summary statistics of the variables are also presented in Table 3.4 in the Appendix.

Distance and income per capita, based on Fafchamps and Shilpi's (2013)

findings, become determinant variables of the regional choice model with a negative and positive relationship, respectively. Another important determinant is the employment or unemployment rate. People will choose a region with a lower unemployment rate to have a higher probability of being active in the job market. For the income and unemployment variables, the important aspect is not only the value of the stock or the rate but also their growth. Growth is relevant as well for micro and small enterprises numbers. Instead of the micro and small enterprises numbers, there is a variable of micro and small enterprises per capita. This variable captures people's willingness of entrepreneurship activities because it shows the number of small enterprises in a region that have been established by the inhabitants. Population density shows the density population of the region (people/km^2).

The determinant variables X_{ip} are developed as follow where $\dot{\tilde{V}}$ means growth of variable V:

$$education\ index\ (ED) ratio = \frac{ED_p}{ED_o} \quad (1)$$

$$micro\ and\ small\ entrerprises\ number\ (MS)\ ratio = \frac{MS_p}{MS_o} \quad (2.1)$$

$$micro\ and\ small\ entrerprises\ number\ growth\ index\ (MSG)\ ratio = \frac{MSG_p}{MSG_o} \quad (2.2)$$

$$MSG_p = \frac{\dot{\overline{MS}}_p - Min\ (\dot{\overline{MS}})}{Max(\dot{\overline{MS}}) - Min\ (\dot{\overline{MS}})} \quad (2.2.1)$$

$$MSG_o = \frac{\dot{\overline{MS}}_o - Min\ (\dot{\overline{MS}})}{Max(\dot{\overline{MS}}) - Min\ (\dot{\overline{MS}})} \quad (2.2.2)$$

$$distance\ (DI)\ = geometrical\ DI\ between\ the\ capital\ city\ of\ destination\ p\ and\ o \quad (3)$$

$$unemployment\ rate\ (UR)\ ratio = \frac{UR_p}{UR_o} \quad (4.1)$$

$$unemployment\ growth\ index (UG)\ ratio = \frac{UG_p}{UG_o} \quad (4.2)$$

$$UG_p = \frac{\dot{\overline{UR}}_p - Min\ (\dot{\overline{UR}})}{Max(\dot{\overline{UR}}) - Min\ (\dot{\overline{UR}})} \quad (4.2.1)$$

$$UG_o = \frac{\dot{\overline{UR}}_o - Min\ (\dot{\overline{UR}})}{Max(\dot{\overline{UR}}) - Min\ (\dot{\overline{UR}})} \quad (4.2.2)$$

$$income\ per\ capita\ (IN)\ ratio = \frac{IN_p}{IN_o} \quad (5.1)$$

$$income\ per\ capita\ growth\ index\ (IG)\ ratio = \frac{IG_p}{IG_o} \quad (5.2)$$

$$IG_p = \frac{\dot{\overline{IN}}_p - Min\ (\dot{\overline{IN}})}{Max(\dot{\overline{IN}}) - Min\ (\dot{\overline{IN}})} \quad (5.2.1)$$

$$IG_o = \frac{\dot{\overline{IN}}_o - Min\ (\dot{\overline{IN}})}{Max(\dot{\overline{IN}}) - Min\ (IN)} \quad (5.2.2)$$

$$micro\ and\ small\ entrerprises\ number\ per\ capita\ density\ (MSd)\ ratio = \frac{MSd_p}{MSd_o} \quad (5.3)$$

$$population\ density\ (DE)\ ratio = \frac{DE_p}{DE_o} \quad (5.4)$$

Based on the alternative-specific conditional logit model, this research then

develops the econometric setting as follows: (1) the model examines region choices in Indonesia; (2) the destination regions are the alternative choices of the migrants; (3) migrants have some individual characteristics; and (4) the logit model is developed based on destination-specific conditions and individual characteristics; and (5) One region is determined as a base alternative to compare the different effects of the other regions with this base alternative.

This research develops four models: model (1) examines the main concept, which is related to the hypotheses in this study – knowledge and entrepreneurship represented by the education index and the number of micro and small enterprises; model (2) extends model (1) to check the robustness of its results using other important variables regarding the changes in economic conditions in terms of growth, such as the growth of the regional income per capita and the growth of the unemployment rate; model (3) extends model (2) to check the robustness using the number of micro and small enterprises per capita instead of only using the number of micro and small enterprises; and model (4) extends model (3) to check the robustness using population density.

3.5 Results

Based on the methodology adopted to test the hypotheses, the models show that there is one coefficient (slope, β_j) for each independent or determinant variable X_{ip}. The coefficient β_j is common to each independent variable (e.g. the education index ratio (*educationindex*), the micro and small enterprises ratio (*microandsmalenterprise*), etc.) and is not a marginal effect. They do not have to be seen relative to the benchmark region (base alternative region). The purpose of the benchmark region is to serve as an alternative to normalize the region, in this case when analysing the individual characteristic variables Z_{io}. The marginal value can be shown by a further post-estimation command. Since this study, however, just aims to show the relationship of the determinant variables and the probability of choosing the region, the marginal values are not presented. The sign of the slope β_j (i.e. positive or negative) and the significance level of the slope β_j are important to show the relationship and the significance between the determinant variable and the dependent variable.

Additionally, each region choice has a separate constant and individual characteristic coefficient. The slope γ_p of the individual characteristic variables Z_{io} in each region (e.g. *movenumber*) and the constant have to be seen relative to the base alternative region. For example, an increase in *movenumber* increases the chances of region 1 to be chosen relative to region 9 (as the base alternative) because the slope of *movenumber* of region 1 is positive (0.621) and significant at the 1% level (see Table 3.2).

The results show that knowledge, represented by the *educationindex*, is a significant determinant of the region choice at the 1% level in model (1) and at the 5% level in model (2). However, the relationship is negative (see Table 3.1). This relationship is presented by the common slope of *educationindex*. Some discussion of this result is necessary. A possible explanation for this finding is that

migrants prefer to have a less competitive job market in the destination region, because a lower *educationindex* means that the mean years of education are lower than in the origin region. Migration might, however, depend on some aspects regarding human capital, such as education level, skills, working experience, and job status. This study cannot however include these human capital aspects as control variables because of data limitation. Another reason for the estimated negative coefficient, which is not studied in the model, is that migrants who want to develop their businesses in low-technological industries may not need a region that has better knowledge. In this case their businesses are possibly conducted with fewer technologies.

Conversely, entrepreneurship, shown by *microandsmalenterprise*, has a significant and positive correlation with the region choice at the 5% level in both model (1) and model (2). The number of small enterprises in a region is positively associated with the likelihood of that region being chosen as a migration destination. One of the possible explanations for this finding is that migrants will search for a region that has a higher survival rate of small companies because they have a supportive entrepreneurship ecosystem.

Table 3.1 Region-Choices Model (Primary: Region Specific Variables)

	(1) Y_{iop}	(2) Y_{iop}	(3) Y_{iop}	(4) Y_{iop}
Educationindex	-56.66***	-40.75**	-40.20***	-40.52***
	(11.25)	(16.03)	(15.28)	(15.52)
Microandsmalenterprise	0.0248**	0.0284**	0.0240*	0.0241*
	(0.0107)	(0.0123)	(0.0126)	(0.0126)
Unemploymentrate	-1.380***	-0.856*	-0.989**	-0.995**
	(0.440)	(0.442)	(0.451)	(0.454)
incomepercapita	0.165	0.155	0.0461	0.0450
	(0.113)	(0.130)	(0.141)	(0.141)
distance	-0.00505***	-0.00478***	-0.00485***	-0.00486***
	(0.000202)	(0.000208)	(0.000213)	(0.000215)
microandsmalenterprise_growth		-0.224	-0.191	-0.190
		(0.210)	(0.208)	(0.208)
unemploymentrate_growth		-0.0405*	-0.0403*	-0.0400*
		(0.0222)	(0.0214)	(0.0216)
incomepercapita_growth		-1.690***	-1.755***	-1.756***
		(0.339)	(0.365)	(0.365)
microandsmalenterprisepercapita			0.262*	0.263*
			(0.139)	(0.140)
density				0.000480
				(0.00405)
Observations	16488	16488	16488	16488
Number of cases	916	916	916	916
Number of alternative regions	18	18	18	18

*Note: Standard errors in parentheses; Prob >chi2 =0.0000; * p<0.10, ** p<0.05, *** p<0.01; Independent variable: Yiop is the likelihood of individual i migrating from origin o to alternative destination region p.*

The base region is set to run the model. The setting of the base region is not important, because this choice will not influence the results of the determinant relationship between the independent and the dependent variables. In this study destination region 9 (West Java = *Jawa Barat*) is set as the base region, because the West Java province is the most populous province in Indonesia and can be considered as having the highest priority as both an origin and a destination region.

Table 3.2 shows the comparisons of each region with the base region. In these tables, the individual characteristics of the migrants are also presented. The individual characteristics, restricted to the available data in the data sets, include *movenumber* and *purposejob. Movenumber* shows the behaviour of migrants in migrating; the more often they have already migrated, the more experience they have in deciding on the destination region. Moreover, *purposejob* shows the migrants' purpose of moving to find a job; it is a dummy variable. An example is described to explain the results of the individual characteristics' determinants in Table 3.2: Region 8, where the city of Jakarta as the capital city of Indonesia is located, is always a better choice than region 9 (the base region). This is shown by the positive and significant coefficient of *purposejob* at the 1% level in both model (1) and model (2).

Furthermore, this study includes other variables in the first model, such as the unemployment rate ratio (*unemploymentrate*), income per capita ratio (*incomepercapita*), and distance (*distance*). *Unemploymentrate* gives a negative and significant relationship with the chosen region. A lower unemployment rate of a destination region compared with the origin region is positively associated with the likelihood of that region being chosen as migration destination. However, *incomepercapita* does not show a significant effect. Moreover, *distance* always has a negative and significant relationship with the chosen region. A close destination region to the origin region is positively associated with the likelihood of that region being chosen as a migration destination.

Besides, to check the robustness of the model, this study includes some variables in model (2) that can explain the growth of related variables, such as the micro and small enterprises' growth index ratio (*microandsmalenterprise_growth*), the unemployment rate growth index ratio (*unemploymentrate_growth*), and the income per capita growth index ratio (*incomepercapita_growth*). Then, model (2) produces the same significant results in term of sign regarding the determinants of *educationindex* and *microandsmalenterprise* as the region choice model, in this case the level of significance of *educationindex* decreases from 1% to 5% but for *microandsmalenterprise* is remaining the same. Furthermore, the second model of region choice shows that *microandsmalenterprise_growth* is not a significant variable. On the other hand, *unemploymentrate_growth* and *incomepercapita_growth* are significant and negative determinants. These results mean that lower growth of the unemployment rate is positively associated with the likelihood of that region being chosen as a migration destination. Additionally, lower growth of the income per capita is positively associated with the likelihood

of that region being chosen as a migration destination. *Unemploymentrate* and *unemploymentrate_growth* present a negative and significant relationship with the chosen region. The result clearly shows that a lower unemployment rate and growth of unemployment rate of a destination region compared with the origin region are positively associated with the likelihood of the former region being chosen as a migration destination. Another result, however, needs to be discussed. *Incomepercapita_growth* – which is a significant and negative determinant – might depend on the stock of *incomepercapita.* For example, the data show that the *incomepercapita_growth* of destination region 17 (1.5%) is lower than that of the base region (4.45%) – it is more or less one-third – but region 17 has an *incomepercapita* (125,460,000 Indonesian rupiah – IDR) with a value 5 times that of the base region (22,968,000 IDR). The model shows that migrants who want to find a job (*purposejob* = 1) will have a higher probability of choosing region 17 (see Table 3.2 regarding the region choice model (extension - 3 out of 3)).

In addition, the robustness of the model is checked with model (3) and model (4). Both produce the same results regarding the determinants of *educationindex* and *microandsmalenterprise* as the region choice model. In model (3), the number of micro and small enterprises per capita (*microandsmalenterprisepercapita*) is added. Furthermore, in model (4), the population density (*density*) is added. The results show that population density is not attractive for migrants but the density of the number of small enterprises in a region – as another proxy for entrepreneurship activities – is positively associated with the likelihood of that region being chosen as a migration destination.

To support the models and the results, Table 3.5 in the Appendix shows the correlation matrix of the independent variables. The low correlation coefficients in the correlation matrix indicate that there is no multicollinearity. In addition, Table 3.6 in the Appendix displays the distance matrix of origin–destination and the region codes used for this study.

Based on the main findings of models (1) and (2) (see Table 3.1), there is no evidence to support hypothesis 1. The region's knowledge represented by the education index is negatively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus. By contrast, there is evidence to accept hypothesis 2. The region's entrepreneurship, represented by the number of micro and small enterprises in a region, is positively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus.

As a further robustness test, this study looks at different subsamples related to the origin regions (see Table 3.3 showing the region choice model based on the origin region's economic conditions and Table 3.7 in the Appendix for the complete model). The sample is grouped into two subsamples. All subsamples contain the economic conditions (e.g. the determinant variable X_{iop} such as income per capita, education index, and unemployment rate) of the origin regions. There are two subsamples for each economic condition. Then, the half of the samples consisting of the origin regions with a lower income per capita (*lowerIN*) becomes the poorer province group and the rest becomes the richer province group (*higherIN*). This grouping method is also applied to the education index and the unemployment rate. Therefore, there are four more groups: the lower education

index group (*lowerED*), the higher education index group (*higherED*), the higher unemployment rate group (*higherUR*), and the lower unemployment rate group (*lowerUR*).

Table 3.2 Region-Choices Model (Extension - 1 out of 3)

		(1) Y_{iop}	(2) Y_{iop}	(3) Y_{iop}	(4) Y_{iop}
Region					
1	*movenumber*	0.621***	0.566***	0.573***	0.572***
		(0.221)	(0.213)	(0.213)	(0.213)
	purposejob	0.0844	0.138	0.0847	0.0873
		(0.844)	(0.813)	(0.817)	(0.817)
	Constant	3.291***	2.551**	2.685**	2.714**
		(0.959)	(1.228)	(1.185)	(1.210)
2	*movenumber*	0.507***	0.451**	0.462**	0.461**
		(0.194)	(0.187)	(0.188)	(0.188)
	purposejob	-0.402	-0.377	-0.379	-0.376
		(0.800)	(0.765)	(0.770)	(0.770)
	Constant	3.359***	2.635**	2.408*	2.437*
		(0.988)	(1.294)	(1.251)	(1.275)
3	*movenumber*	0.384	0.281	0.283	0.283
		(0.247)	(0.254)	(0.251)	(0.251)
	purposejob	1.502*	1.715*	1.646*	1.649*
		(0.890)	(0.886)	(0.882)	(0.882)
	Constant	-2.134***	-3.447***	-3.000***	-2.985***
		(0.663)	(0.715)	(0.755)	(0.766)
4	*movenumber*	-0.0455	-0.0589	-0.0601	-0.0608
		(0.358)	(0.352)	(0.353)	(0.353)
	purposejob	3.189**	3.142**	3.154**	3.157**
		(1.254)	(1.239)	(1.243)	(1.242)
	Constant	-4.357***	-3.566***	-3.578***	-3.572***
		(1.150)	(1.156)	(1.158)	(1.159)
5	*movenumber*	0.235	0.216	0.220	0.219
		(0.145)	(0.140)	(0.141)	(0.141)
	purposejob	-0.327	-0.326	-0.320	-0.317
		(0.598)	(0.578)	(0.582)	(0.582)
	Constant	-3.121***	-2.359***	-2.339***	-2.345***
		(0.556)	(0.706)	(0.687)	(0.689)

Note: Standard errors in parentheses; Prob >chi2 = 0.0000; * p<0.10, ** p<0.05, *** p<0.01; Independent variable*:* Y_{iop} is the likelihood of individual *i* migrating from origin *o* to alternative destination region *p*.

Table 3.2 Region-Choices Model (Extension - 2 out of 3)

		(1) Y_{iop}	(2) Y_{iop}	(3) Y_{iop}	(4) Y_{iop}
Region					
6	*movenumber*	0.257**	0.241*	0.241*	0.240*
		(0.125)	(0.123)	(0.123)	(0.123)
	purposejob	-0.664	-0.633	-0.640	-0.639
		(0.530)	(0.518)	(0.520)	(0.520)
	Constant	-2.599***	-1.831***	-1.968***	-1.975***
		(0.443)	(0.526)	(0.524)	(0.526)
7	*movenumber*	-0.480	-0.484	-0.479	-0.479
		(0.397)	(0.401)	(0.401)	(0.401)
	Purposejob	0.621	0.762	0.764	0.764
		(0.876)	(0.888)	(0.890)	(0.890)
	Constant	-6.882***	-5.777***	-5.720***	-5.743***
		(1.071)	(1.501)	(1.454)	(1.465)
8	*Movenumber*	-0.141	-0.105	-0.110	-0.110
		(0.139)	(0.135)	(0.135)	(0.135)
	Purposejob	1.246***	1.233***	1.214***	1.216***
		(0.381)	(0.375)	(0.376)	(0.377)
	Constant	7.173***	4.967**	5.528***	5.571***
		(1.532)	(2.126)	(2.060)	(2.090)
9	*(base alternative)*				
10	*Movenumber*	0.106	0.0982	0.0830	0.0831
		(0.124)	(0.120)	(0.118)	(0.118)
	Purposejob	-1.519***	-1.362***	-1.310***	-1.311***
		(0.528)	(0.513)	(0.505)	(0.506)
	Constant	-3.975***	-2.753***	-3.092***	-3.115***
		(0.714)	(0.998)	(0.976)	(0.994)
11	*Movenumber*	0.000917	-0.00975	-0.0252	-0.0254
		(0.174)	(0.177)	(0.176)	(0.177)
	Purposejob	-1.172	-0.982	-0.946	-0.947
		(0.756)	(0.761)	(0.756)	(0.756)
	Constant	7.615***	4.955*	4.445	4.496
		(1.979)	(2.862)	(2.729)	(2.761)
12	*Movenumber*	0.0901	0.0807	0.0685	0.0686
		(0.144)	(0.140)	(0.139)	(0.139)
	Purposejob	-1.303**	-1.163**	-1.115**	-1.116**
		(0.587)	(0.567)	(0.567)	(0.567)
	Constant	-3.350***	-1.936**	-2.154***	-2.172***
		(0.616)	(0.791)	(0.783)	(0.796)

Table 3.2 Region-Choices Model (Extension - 3 out of 3)

		(1) Y_{iop}	(2) Y_{iop}	(3) Y_{iop}	(4) Y_{iop}
Region					
13	*movenumber*	-0.285	-0.272	-0.257	-0.257
		(0.185)	(0.184)	(0.183)	(0.183)
	purposejob	1.113**	1.107**	1.097**	1.097**
		(0.449)	(0.447)	(0.447)	(0.447)
	Constant	0.224	-0.264	-0.113	-0.105
		(0.363)	(0.424)	(0.425)	(0.431)
14	*movenumber*	0.0536	0.0278	0.0143	0.0143
		(0.206)	(0.207)	(0.209)	(0.209)
	purposejob	0.385	0.474	0.545	0.546
		(0.705)	(0.682)	(0.687)	(0.688)
	Constant	-1.151	-0.479	-1.009	-1.007
		(0.864)	(0.965)	(0.993)	(0.993)
15	*movenumber*	0.142	0.0672	0.0546	0.0547
		(0.178)	(0.286)	(0.293)	(0.293)
	purposejob	-1.342*	-1.735	-1.799	-1.801
		(0.776)	(1.311)	(1.387)	(1.389)
	Constant	-3.356***	-4.595***	-4.986***	-5.003***
		(0.639)	(1.009)	(1.016)	(1.027)
16	*movenumber*	-0.0209	-0.0507	-0.0670	-0.0665
		(0.225)	(0.220)	(0.222)	(0.222)
	purposejob	-0.473	-0.362	-0.301	-0.301
		(0.747)	(0.723)	(0.728)	(0.728)
	Constant	-2.620***	-1.897***	-2.167***	-2.179***
		(0.599)	(0.704)	(0.711)	(0.717)
17	*movenumber*	-0.422	-0.749*	-0.781*	-0.780*
		(0.392)	(0.449)	(0.449)	(0.449)
	purposejob	1.899	2.303*	2.360*	2.361*
		(1.182)	(1.282)	(1.285)	(1.285)
	Constant	4.148***	0.987	1.468	1.513
		(1.308)	(1.730)	(1.702)	(1.744)
18	*movenumber*	0.440**	0.532***	0.533***	0.533***
		(0.206)	(0.200)	(0.199)	(0.199)
	purposejob	-0.183	-0.0564	0.0125	0.0132
		(0.874)	(0.867)	(0.872)	(0.872)
	Constant	0.950	1.055	0.908	0.920
		(0.612)	(0.777)	(0.763)	(0.770)
	Observations	16488	16488	16488	16488
	AIC	2356.0	2294.0	2292.7	2294.6
	BIC	2787.8	2748.9	2755.3	2765.0
	Number of cases	916	916	916	916
	Number of alternative regions	18	18	18	18

Table 3. 3 Region Choice Model: Classifying based on Origin Region Economic Conditions (Part 1 out of 2)

	Origin-Region's Income Per Capita (IN) Group				Origin-Region's Educational Index (ED) Group			
	lowerIN		*higherIN*		*lowerED*		*higherED*	
	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Y_{iop}	Y_{iop}	Y_{iop}	Y_{iop}	Y_{iop}	Y_{iop}	Y_{iop}	Y_{iop}
educationindex	-39.03**	-29.96	-66.76***	-74.83***	-27.45	26.33	-45.78*	-25.06
	(16.11)	(25.97)	(25.79)	(26.72)	(43.40)	(43.58)	(25.30)	(29.47)
microandsmalenterprise	-0.0758	-0.108	0.0306***	0.0677***	0.0664***	0.117***	0.0130	0.00888
	(0.0762)	(0.0758)	(0.0118)	(0.0158)	(0.0125)	(0.0242)	(0.0340)	(0.0373)
unemploymentrate	-0.971	-1.487*	-1.275**	-0.763	2.117**	2.821***	-0.751	-0.705
	(0.786)	(0.808)	(0.573)	(0.553)	(0.845)	(0.952)	(0.573)	(0.567)
incomepercapita	0.278	0.121	0.0444	0.211	0.547	0.893**	-0.197	-0.0588
	(0.486)	(0.509)	(0.237)	(0.247)	(0.474)	(0.449)	(0.182)	(0.190)
distance	-0.00521***	-0.00455***	-0.00365***	-0.00357***	-0.00802***	-0.00768***	-0.00377***	-0.00370***
	(0.000331)	(0.000349)	(0.000269)	(0.000268)	(0.000473)	(0.000531)	(0.000292)	(0.000289)
microandsmalenterprise_growth		-1.560		-1.032***		-1.263***		-0.699
		(3.647)		(0.293)		(0.451)		(1.028)
unemploymentrate_growth		-0.00772		-0.164		-1.610*		-0.0432*
		(0.0367)		(0.110)		(0.873)		(0.0226)
incomepercapita_growth		-2.501***		-2.318***		-1.725***		-2.565***
		(0.822)		(0.583)		(0.553)		(0.641)
Observations	8352	8352	8136	8136	8856	8856	6840	6840
Number of cases	464	464	452	452	492	492	380	380
Number of alternative regions	18	18	18	18	18	18	18	18

Note: Standard errors in parentheses; Prob >chi2 = 0.0000; * p<0.10, ** p<0.05, *** p<0.01;
Independent variable*:* Y_{iop} is the likelihood of individual *i* migrating from origin *o* to alternative destination region *p*.

Table 3.3 Region Choice Model: Classifying based on Origin Region Economic Conditions (Part 2 out of 2)

	Origin-Region's Unemployment Rate (UR) Group			
	higherUR		*lowerUR*	
	(13)	(14)	(15)	(16)
	Y_{iop}	Y_{iop}	Y_{iop}	Y_{iop}
educationindex	18.63	12.12	-56.10***	-14.02
	(43.00)	(44.16)	(12.72)	(26.01)
microandsmalenterprise	-0.0509	-0.0430	0.0779***	0.102***
	(0.0354)	(0.0354)	(0.0118)	(0.0190)
unemploymentrate	1.867	3.486	-2.268***	-0.648
	(3.303)	(3.535)	(0.679)	(0.686)
incomepercapita	-0.240	-0.189	-0.701*	0.174
	(0.245)	(0.254)	(0.406)	(0.411)
distance	-0.00334***	-0.00331***	-0.00707***	-0.00663***
	(0.000354)	(0.000374)	(0.000373)	(0.000375)
microandsmalenterprise_growth		-0.374		-0.932**
		(0.603)		(0.371)
unemploymentrate_growth		-0.908**		-0.0700*
		(0.438)		(0.0360)
incomepercapita_growth		-5.226**		-1.489***
		(2.248)		(0.400)
Observations	4968	4968	9270	9270
Number of cases	276	276	515	515
Number of alternative regions	18	18	18	18

Note: Standard errors in parentheses; Prob >chi2 = 0.0000; * p<0.10, ** p<0.05, *** p<0.01;
Independent variable*:* Y_{iop} is the likelihood of individual *i* migrating from origin *o* to alternative destination region *p.*

The results from model (1) and model (2) – which imply that the region's knowledge represented by the education index is negatively associated with the likelihood of that region being chosen as a migration destination and that the region's entrepreneurship, represented by the number of micro and small enterprises in a region, is positively associated with the likelihood of that region being chosen as a migration destination – are only robust for the *higherIN* group, as shown by model (7) and model (8). These results mean that migrants coming from the higher income per capita group of the origin regions will probably choose destination regions that have a lower education index or a higher number of micro and small enterprises. Nevertheless, these findings – as they have been discussed – depend on some aspects that deal with human capital. More results that might depend on human capital aspects are presented by model (9), model (10), model (15), and model (16) that show that migrants coming from the *lowerED* and *lowerUR* of the origin region will probably choose destination regions with a higher number of micro and small enterprises.

3.6 Conclusion

This study can answer the research question, whether knowledge and entrepreneurship are significant determinant variables of regional choice in regional migration. There are two hypotheses in this study. Hypothesis 1 is developed to answer the knowledge related question. As a proxy of knowledge, the education index of a region is hypothesized to be positively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus. Hypothesis 2 is developed to answer the entrepreneurship related question. As a proxy of entrepreneurship, the number of micro and small enterprises in a region is hypothesized to be positively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus.

In the context of entrepreneurship, the number of small enterprises of a region is positively associated with the likelihood of that region being chosen as a migration destination. One of the possible explanations for this finding is that migrants will search for a region with a supportive entrepreneurship ecosystem and new job opportunities. These factors respectively become the support factor and the outcome effect of entrepreneurship.

On the other hand, in terms of knowledge that can support businesses, using the education index as a proxy, people in Indonesia would like to choose regions with less-developed knowledge. A possible explanation for this finding might be that migrants prefer to have a less competitive job market in the destination region.

This research investigates regional migration in Indonesia. It is a specific country case that represents the human capital of the inhabitants of Indonesia. This research can improve the previous research in terms of the methodology,

which applies the pairwise comparison/ratio of the origin–destination regions to build the alternative-specific conditional logit model for region choices.

This research has some limitations, such as the use of the time window of five years, the use of proxies for knowledge and entrepreneurship, and the use of cross-sectional data.

A further research agenda tries to answer questions such as the following: 1) why do people in Indonesia prefer regions with less-developed knowledge and 2) can migrants successfully develop start-ups or new firms and have surviving firms in their destination region?

This study becomes a first step providing some suggestions which could then be used as basis for studies which try to establish causal-effects relationship between region specific variables and region choice in migration which then can be used for practical and policy recommendations. Based on the findings, migrants would like to choose regions with less-developed knowledge when they compare the destination and origin conditions. Therefore, this suggest to examine the effect of regional knowledge to the region choice because if it is hold true the local government of the destination region can design knowledge transfer or knowledge-sharing policies that take advantage of the migrants' knowledge because previously they lived in a region with a higher level of knowledge. Migrants flow to regions with more entrepreneurial activities. This suggest to examine the effect of regional entrepreneurship to the region choice because if it is hold true the government could maintain the entrepreneurship ecosystem in the destination region to support migrants' firm performance and sustainability. It is also important to create a supportive entrepreneurship ecosystem in the origin region to keep the human capital in the region and develop entrepreneurship.

3.7 Appendices

Table 3.4 Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
originED	16488	61.40331	3.910109	51.28	70.7
destED	16488	61.61722	4.165565	55.54	70.7
educationindex	16488	1.007395	.0918956	.7855729	1.378705
originMS	16488	247690.8	269203.1	9714	821292
destMS	16488	163435.4	227050	9714	821292
microandsmalenterprise	16488	2.068356	514.548	.0118277	84.54725
originMSG	16488	.020345	.0732695	-.276	.214
destMSG	16488	-.007	.1113172	-.276	.159
microandsmalenterprise_growth	16488	1.027978	.7837058	.1075722	8.364891
originUR	16488	6.517795	2.136605	2.3	11.2
destUR	16488	6.2	2.374706	2.3	11.2
unemploymentrate	16488	1.074182	.6182163	.2053571	4.869565
originUG	16488	-.0386332	.0385148	-.12	.026
destUG	16488	-.0427778	.0445516	-.12	.026
unemploymentrate_growth	16488	208.877	5.102.642	.0209228	47.79483
originIN	16488	33090.38	26594.61	14927	125460
destIN	16488	38804	32375.22	14927	125460
incomepercapita	16488	1.493317	13.895	.1189782	8.404903
originIG	16488	4.389389	1.450.837	-.21	6.84
destIG	16488	4.069444	1.696.287	-.21	6.84
incomepercapita_growth	16488	1.105263	.821988	.169259	5.908103
distance	16488	966.0893	671.5215	0	5183
originmicroandsmalenterprisepercapita	16488	.0133639	.006969	.0027465	.0287668
destmicroandsmalenterprisepercapita	16488	.012919	.0073452	.0027465	.0274584
microandsmalenterprisepercapita	16488	1.355.738	130.424	.0954735	9.997.697
origindensity	16488	1.442.041	3526.67	10	14899
destdensity	16488	1.241.611	3340.59	20	14899
densityratio	16488	6.162.293	292.149	.0013424	1489.9
movenumber	16488	1.152838	1.491873	0	7
purposejob	16488	.2085153	.4062594	0	1

Table 3.5 Correlation Table

VariableID		1	2	3	4	5	6	7	8	9	10	11	12
1	*educationindex*	1.0000											
2	*microandsmalenterprise*	-0.2044*	1.0000										
3	*microandsmalenterprise_growth*	0.0493*	0.3692*	1.0000									
4	*unemploymentrate*	0.2731*	0.0138	-0.0402*	1.0000								
5	*unemploymentrate_growth*	-0.3071*	0.0228*	-0.0174*	0.1038*	1.0000							
6	*incomepercapita*	0.4528*	-0.1920*	-0.2956*	0.3284*	0.0105	1.0000						
7	*incomepercapita_growth*	0.1653*	0.1298*	0.1212*	-0.0165*	-0.0897*	0.0305*	1.0000					
8	*distance*	-0.0358*	0.0279*	-0.0214*	0.0148	-0.0081	0.0616*	0.0285*	1.0000				
9	*microandsmalenterprisepercapita*	-0.3085*	0.4218*	0.1551*	0.2748*	-0.3869*	-0.1075*	-0.4317*	0.0201*	1.000			
10	*density*	0.2014*	0.0451*	0.0162*	0.1029*	0.1639*	-0.0377*	0.2532*	0.0924*	-0.0494*	1.000		
11	*movenumber*	-0.0500*	0.0154*	0.0076	-0.0153*	0.0073	-0.0266*	0.0115	-0.0070	0.0357*	0.0131	1.0000	
12	*purposejob*	-0.0803*	0.0135	-0.0023	-0.0349*	-0.0334*	-0.0449*	-0.0504*	0.0082	0.0838*	0.0013	0.1203*	1.0000

Notes: * significant at minimum 5%

Table 3. 6 Region Distance Matrix: Origin –Destination (Part 1 out of 2)

			Destination									
	Origin		Region	1	2	3	4	5	6	7	8	9
	Capital City (CapCity)	Province Name (ProvName)	CapCity	Medan	Padang	Pekanbaru	Jambi	Palembang	Bandar Lampung	Pangkal Pinang	Jakarta	Bandung
			ProvID	12	13	14	15	16	18	19	31	32
1	Aceh	Aceh	11	427	920	876	1215	1414	1650	1476	1933	1949
2	Medan	North Sumaterra	12	0	540	164	791	1001	1237	1047	1421	1536
3	Padang	West Sumatera	13	540	0	196	366	536	734	652	927	1038
4	Pekanbaru	Riau	14	164	196	0	339	535	781	599	964	1072
5	Jambi	Jambi	15	791	366	339	0	199	460	289	620	736
6	Palembang	South Sumatera	16	1001	536	535	199	0	274	179	431	544
7	Bandar Lampung	Lampung	18	1237	734	781	460	274	0	375	202	312
8	Pangkal Pinang	Bangka Belitung	19	1047	652	599	289	179	375	0	460	556
9	Jakarta	Jakarta	31	1421	927	964	620	431	202	460	0	130
10	Bandung	West Java	32	1536	1038	1072	736	544	312	556	130	0
11	Semarang	Central Java	33	1823	1329	1366	1022	833	604	722	402	312
12	Yogyakarta	Yogyakarta	34	1851	1357	1394	1050	861	632	789	430	316
13	Surabaya	East Java	35	2081	1587	1624	1280	1091	862	929	660	570
14	Tangerang	Banten	36	1408	901	937	611	413	178	457	19	131
15	Denpasar	Bali	51	2377	1883	1920	1576	1387	1158	1239	956	860
16	Mataram	NTB	52	2469	1975	2012	1668	1479	1250	1316	1048	966
17	Banjarmasin	South Kalimantan	63	2327	1833	1870	1526	1337	1108	949	906	879
18	Samarinda	East Kalimantan	64	2716	2222	2259	1915	1726	1497	1240	1295	1280
19	Palu	Central Sulawesi	72	2968	2474	2511	2167	1978	1749	1536	1547	1522
20	Makasar	South Sulawei	73	2807	2313	2350	2006	1817	1588	1513	1386	1322
21	Kendari	South East Sulawesi	74	2672	2709	2365	2176	1947	1745	1834	1745	1690
22	Jayapura	Papua	82	5183	4689	4726	4382	4193	3964	3841	3762	3698

Source: authors own measurement using https://www.daftlogic.com/projects-google-maps-distance-calculator.htm

Table 3.6 Region Distance Matrix: Origin –Destination (Part 2 out of 2)

			Destination									
	Origin		Region	10	11	12	13	14	15	16	17	18
	Capital City (CapCity)	Province Name (ProvName)	CapCity ProvID	Semarang 33	Yogyakarta 34	Surabaya 35	Tangerang 36	Denpasar 51	Mataram 52	Banjarmasin 63	Samarinda 64	Makasar 73
1	Aceh	Aceh	11	2335	2363	2593	1818	2889	2981	2839	3228	3319
2	Medan	North Sumaterra	12	1823	1851	2081	1408	2377	2469	2327	2716	2807
3	Padang	West Sumatera	13	1329	1357	1587	901	1883	1975	1833	2222	2313
4	Pekanbaru	Riau	14	1366	1394	1624	937	1920	2012	1870	2259	2350
5	Jambi	Jambi	15	1022	1050	1280	611	1576	1668	1526	1915	2006
6	Palembang	South Sumatera	16	833	861	1091	413	1387	1479	1337	1726	1817
7	Bandar Lampung	Lampung	18	604	632	862	178	1158	1250	1108	1497	1588
8	Pangkal Pinang	Bangka Belitung	19	722	789	929	457	1239	1316	949	1240	1513
9	Jakarta	Jakarta	31	402	430	660	19	956	1048	906	1295	1386
10	Bandung	West Java	32	312	316	570	131	860	966	879	1280	1322
11	Semarang	Central Java	33	0	95	256	427	557	649	621	1037	1018
12	Yogyakarta	Yogyakarta	34	95	0	245	448	513	608	672	1091	1018
13	Surabaya	East Java	35	256	245	0	683	309	394	487	895	775
14	Tangerang	Banten	36	427	448	683	0	982	1077	942	1323	1417
15	Denpasar	Bali	51	557	513	309	982	0	101	601	938	610
16	Mataram	NTB	52	649	608	394	1077	101	0	609	910	526
17	Banjarmasin	South Kalimantan	63	621	672	487	942	601	609	0	424	567
18	Samarinda	East Kalimantan	64	1037	1091	895	1323	938	910	424	0	577
19	Palu	Central Sulawesi	72	1246	1286	1063	1578	1011	654	644	288	476
20	Makasar	South Sulawei	73	1018	1018	775	1417	610	526	567	577	0
21	Kendari	South East Sulawesi	74	1379	1402	1139	1777	958	873	878	709	364
22	Jayapura	Papua	82	3390	3382	3137	3798	1902	2802	2901	2625	2378

Source: authors own measurement using https://www.daftlogic.com/projects-google-maps-distance-calculator.htm

Table 3.7 Complete Model: Classifying based on Origin Region Economic Conditions (Part 1 out of 4)

		Origin-Region's Income Per Capita (IN) Group				Origin-Region's Educational Index (ED) Group				Origin-Region's Unemployment Rate (UR) Group			
		lowerIN		*higherIN*		*lowerED*		*higherED*		*higherUR*		*lowerUR*	
		(5) Y_{iop}	(6) Y_{iop}	(7) Y_{iop}	(8) Y_{iop}	(9) Y_{iop}	(10) Y_{iop}	(11) Y_{iop}	(12) Y_{iop}	(13) Y_{iop}	(14) Y_{iop}	(15) Y_{iop}	(16) Y_{iop}
Region	*educationindex*	-39.03**	-29.96	-66.76***	-74.83***	-27.45	26.33	-45.78*	-25.06	18.63	12.12	-56.10***	-14.02
		(16.11)	(25.97)	(25.79)	(26.72)	(43.40)	(43.58)	(25.30)	(29.47)	(43.00)	(44.16)	(12.72)	(26.01)
	microandsmalenterprise	-0.0758	-0.108	0.0306***	0.0677***	0.0664***	0.117***	0.0130	0.00888	-0.0509	-0.0430	0.0779***	0.102***
		(0.0762)	(0.0758)	(0.0118)	(0.0158)	(0.0125)	(0.0242)	(0.0340)	(0.0373)	(0.0354)	(0.0354)	(0.0118)	(0.0190)
	unemploymentrate	-0.971	-1.487*	-1.275**	-0.763	2.117**	2.821***	-0.751	-0.705	1.867	3.486	-2.268***	-0.648
		(0.786)	(0.808)	(0.573)	(0.553)	(0.845)	(0.952)	(0.573)	(0.567)	(3.303)	(3.535)	(0.679)	(0.686)
	incomepercapita	0.278	0.121	0.0444	0.211	0.547	0.893**	-0.197	-0.0588	-0.240	-0.189	-0.701*	0.174
		(0.486)	(0.509)	(0.237)	(0.247)	(0.474)	(0.449)	(0.182)	(0.190)	(0.245)	(0.254)	(0.406)	(0.411)
	distance	-0.00521***	-0.00455***	-0.00365***	-0.00357***	-0.00802***	-0.00768***	-0.00377***	-0.00370***	-0.00334***	-0.00331***	-0.00707***	-0.00663***
		(0.000331)	(0.000349)	(0.000269)	(0.000268)	(0.000473)	(0.000531)	(0.000292)	(0.000289)	(0.000354)	(0.000374)	(0.000373)	(0.000375)
	microandsmalenterprise_growth		-1.560		-1.032***		-1.263***		-0.699		-0.374		-0.932**
			(3.647)		(0.293)		(0.451)		(1.028)		(0.603)		(0.371)
	unemploymentrate_growth		-0.00772		-0.164		-1.610*		-0.0432*		-0.908**		-0.0700*
			(0.0367)		(0.110)		(0.873)		(0.0226)		(0.438)		(0.0360)
	incomepercapita_growth		-2.501***		-2.318***		-1.725***		-2.565***		-5.226**		-1.489***
			(0.822)		(0.583)		(0.553)		(0.641)		(2.248)		(0.400)
1	movenumber	-0.311	-0.241	1.071***	1.108***	-0.240	-0.264	0.751***	0.774***	0.651**	0.654**	0.0657	0.0934
		(0.402)	(0.363)	(0.326)	(0.326)	(0.334)	(0.331)	(0.276)	(0.282)	(0.267)	(0.265)	(0.416)	(0.401)
	Constant	2.923*	1.840	4.625**	5.842***	9.199***	5.714*	2.294	1.012	-2.180	-0.775	6.340***	3.899*
		(1.619)	(2.038)	(1.938)	(2.008)	(3.463)	(3.382)	(1.825)	(2.157)	(3.250)	(3.345)	(1.403)	(2.188)
2	movenumber	-0.0400	0.000879	0.782**	0.795**	-0.444	-0.547	0.716***	0.729***	0.399**	0.414**	-0.274	-0.304
		(0.324)	(0.287)	(0.362)	(0.362)	(0.616)	(0.634)	(0.259)	(0.264)	(0.200)	(0.206)	(0.393)	(0.388)
	Constant	2.451	2.085	3.903*	5.708***	4.539	2.038	2.318	1.247	-1.384	0.394	5.899***	3.726*
		(1.574)	(2.202)	(2.097)	(2.183)	(3.728)	(3.552)	(1.938)	(2.311)	(3.371)	(3.507)	(1.352)	(2.252)

Table 3.7 Complete Model: Classifying based on Origin Region Economic Conditions (Part 2 out of 4)

		Origin-Region's Income Per Capita (IN) Group				Origin-Region's Educational Index (ED) Group				Origin-Region's Unemployment Rate (UR) Group			
		lowerIN		*higherIN*		*lowerED*		*higherED*		*higherUR*		*lowerUR*	
		(5) Y_{iop}	(6) Y_{iop}	(7) Y_{iop}	(8) Y_{iop}	(9) Y_{iop}	(10) Y_{iop}	(11) Y_{iop}	(12) Y_{iop}	(13) Y_{iop}	(14) Y_{iop}	(15) Y_{iop}	(16) Y_{iop}
3	movenumber	-0.627	-0.664	0.991***	0.977***	-0.0710	0.0266	0.704**	0.643**	-0.260	-0.762	0.0516	0.0991
		(0.820)	(0.798)	(0.342)	(0.350)	(670.5)	(432.8)	(0.298)	(0.314)	(0.810)	(1.113)	(0.393)	(0.389)
	Constant	-2.297	-4.349**	-0.749	-2.317**	-12.63	-14.32	-1.546*	-4.338***	-1.911	-3.842*	2.172*	-0.664
		(1.616)	(1.791)	(0.787)	(0.925)	(1547.6)	(1057.3)	(0.857)	(1.074)	(1.842)	(2.274)	(1.169)	(1.349)
4	movenumber	0.174	0.204	0.606	0.572	0.0572	-0.0373	0.454	0.457	0.139	0.171	0.0483	0.0464
		(0.579)	(0.568)	(0.451)	(0.456)	(0.476)	(0.506)	(0.467)	(0.470)	(977.0)	(1378.5)	(0.523)	(0.515)
	Constant	-3.727**	-3.822**	-2.474**	-0.700	0.302	2.822	-2.780***	-2.210**	-16.97	-14.79	-3.185**	-1.432
		(1.749)	(1.841)	(0.973)	(1.007)	(1.524)	(1.746)	(1.010)	(1.031)	(1840.9)	(2660.8)	(1.489)	(1.503)
5	movenumber	0.261	0.259	0.623**	0.626**	-0.0852	-0.0720	0.825**	0.805**	0.550*	0.541*	-0.0668	-0.0729
		(0.293)	(0.286)	(0.291)	(0.292)	(0.211)	(0.209)	(0.337)	(0.338)	(0.305)	(0.310)	(0.254)	(0.249)
	Constant	-4.038***	-4.806***	-2.685**	-2.956***	0.989	2.348	-4.834***	-4.424***	-1.949	-2.022	-2.191***	-0.0368
		(1.015)	(1.679)	(1.049)	(1.085)	(1.703)	(1.703)	(1.422)	(1.502)	(2.338)	(2.459)	(0.812)	(1.163)
6	movenumber	0.0703	0.0638	0.798***	0.795***	0.111	0.122	0.473*	0.470*	0.263	0.260	0.113	0.102
		(0.161)	(0.157)	(0.305)	(0.306)	(0.162)	(0.153)	(0.257)	(0.260)	(0.198)	(0.198)	(0.229)	(0.224)
	Constant	-2.154***	-2.249**	-3.096***	-2.517***	0.754	3.006**	-2.615***	-2.028**	-0.712	0.381	-2.410***	0.0240
		(0.621)	(0.897)	(0.810)	(0.835)	(1.158)	(1.312)	(0.904)	(0.926)	(1.817)	(1.971)	(0.725)	(0.935)
7	movenumber	-0.313	-0.309	-0.236	-0.136	-0.608	-0.457	-12.22	-12.86	-0.0979	-0.315	-0.745	-0.693
		(0.538)	(0.536)	(0.579)	(0.619)	(0.400)	(0.432)	(722.7)	(916.1)	(0.826)	(0.906)	(0.482)	(0.515)
	Constant	-5.378***	-7.144**	-6.986***	-9.126***	0.151	4.196	-6.110***	-5.688**	-0.715	-0.568	-5.919***	-2.626
		(1.493)	(3.605)	(2.184)	(2.423)	(3.631)	(3.992)	(2.326)	(2.705)	(4.214)	(4.534)	(1.350)	(2.378)
8	movenumber	-0.0266	-0.0225	0.231	0.288	-0.0332	-0.0377	-0.0342	0.0238	-0.122	-0.123	0.0664	0.0612
		(0.154)	(0.155)	(0.304)	(0.303)	(0.163)	(0.164)	(0.236)	(0.234)	(0.164)	(0.164)	(0.239)	(0.236)
	Constant	3.991	3.226	9.576***	10.65***	1.438	-8.736	6.841**	3.760	-2.823	-1.762	12.26***	1.521
		(3.173)	(4.772)	(3.336)	(3.454)	(6.681)	(6.720)	(3.368)	(4.003)	(5.688)	(5.806)	(2.749)	(4.609)

Table 3.7 Complete Model: Classifying based on Origin Region Economic Conditions (Part 3 out of 4)

		Origin-Region's Income Per Capita (IN) Group				Origin-Region's Educational Index (ED) Group				Origin-Region's Unemployment Rate (UR) Group			
		lowerIN		*higherIN*		*lowerED*		*higherED*		*higherUR*		*lowerUR*	
		(5) Y_{iop}	(6) Y_{iop}	(7) Y_{iop}	(8) Y_{iop}	(9) Y_{iop}	(10) Y_{iop}	(11) Y_{iop}	(12) Y_{iop}	(13) Y_{iop}	(14) Y_{iop}	(15) Y_{iop}	(16) Y_{iop}
9	(base alternative)												
10	movenumber	-0.210	-0.192	0.940***	0.913***	-0.115	-0.0811	0.373	0.368	0.289*	0.287*	-0.0572	-0.0550
		(0.137)	(0.134)	(0.310)	(0.311)	(0.155)	(0.150)	(0.254)	(0.254)	(0.165)	(0.166)	(0.179)	(0.181)
	Constant	-2.638***	-2.299	-5.716***	-5.946***	-0.832	3.366	-3.346**	-2.005	0.940	1.622	-5.551***	-1.653
		(1.017)	(1.681)	(1.580)	(1.660)	(2.638)	(2.811)	(1.446)	(1.736)	(2.849)	(2.983)	(0.894)	(1.690)
11	movenumber	-0.173	-0.159	0.339	0.309	-0.125	-0.0975	0.0484	0.0613	-13.98	-15.07	0.0377	0.0190
		(0.183)	(0.184)	(0.561)	(0.566)	(0.244)	(0.240)	(0.269)	(0.277)	(682.5)	(1101.3)	(0.220)	(0.215)
	Constant	4.831	2.418	8.397*	9.939**	5.275	-4.992	6.622*	2.710	-3.418	-2.855	5.650**	-0.0721
		(3.059)	(4.711)	(4.527)	(4.607)	(7.900)	(8.070)	(3.899)	(4.726)	(7.437)	(7.585)	(2.365)	(4.736)
12	movenumber	-0.386	-0.377	0.669**	0.633**	-0.0423	-0.0203	0.0448	0.0367	-0.238	-0.221	0.0919	0.0593
		(0.543)	(0.534)	(0.303)	(0.300)	(0.183)	(0.177)	(0.347)	(0.353)	(0.485)	(0.480)	(0.202)	(0.197)
	Constant	-4.216***	-3.692**	-3.165***	-2.412**	0.117	3.959*	-2.264*	-0.783	0.825	3.185	-5.233***	-1.568
		(1.122)	(1.517)	(1.148)	(1.217)	(1.813)	(2.099)	(1.198)	(1.379)	(2.655)	(2.927)	(0.900)	(1.311)
13	movenumber	-0.760*	-0.762*	0.334	0.374	-0.647*	-0.645*	0.0417	0.0537	-0.0730	-0.0777	-1.005	-0.996
		(0.430)	(0.430)	(0.317)	(0.317)	(0.382)	(0.382)	(0.258)	(0.259)	(0.193)	(0.196)	(0.635)	(0.627)
	Constant	-0.151	-0.333	1.040*	1.147*	-0.553	-2.681**	0.437	-0.109	-1.964*	-2.965**	2.360***	0.735
		(0.505)	(0.653)	(0.626)	(0.671)	(0.856)	(1.111)	(0.670)	(0.777)	(1.066)	(1.177)	(0.570)	(0.776)
14	movenumber	-0.827	-0.703	0.712**	0.712**	-0.283	-0.292	0.127	0.148	-0.351	-0.317	0.237	0.164
		(0.940)	(0.827)	(0.340)	(0.340)	(0.509)	(0.453)	(0.323)	(0.313)	(0.441)	(0.436)	(0.284)	(0.269)
	Constant	-1.989	-1.362	-0.0543	1.371	1.936	2.114	0.861	0.639	0.919	2.413	-3.921***	-1.758
		(1.493)	(1.695)	(1.391)	(1.394)	(1.954)	(2.127)	(1.318)	(1.444)	(2.856)	(2.985)	(1.420)	(1.613)
15	movenumber	0.0430	0.621	0.406	0.329	0.133	0.526	-0.235	-0.392	-0.771	-1.836	0.250	0.242
		(0.238)	(0.459)	(0.448)	(0.458)	(0.236)	(0.370)	(0.463)	(0.457)	(0.902)	(1.269)	(0.251)	(0.317)
	Constant	-2.528***	-8.582***	-4.356***	-5.448***	0.237	0.499	-2.288*	-2.826*	1.218	-1.428	-5.685***	-3.986**
		(0.890)	(3.097)	(1.295)	(1.506)	(2.153)	(3.011)	(1.329)	(1.579)	(2.618)	(3.230)	(0.899)	(1.566)

Table 3.7 Complete Model: Classifying based on Origin Region Economic Conditions (Part 4 out of 4)

		Origin-Region's Income Per Capita (IN) Group				Origin-Region's Educational Index (ED) Group				Origin-Region's Unemployment Rate (UR) Group			
		lowerIN		*higherIN*		*lowerED*		*higherED*		*higherUR*		*lowerUR*	
		(5) Y_{iop}	(6) Y_{iop}	(7) Y_{iop}	(8) Y_{iop}	(9) Y_{iop}	(10) Y_{iop}	(11) Y_{iop}	(12) Y_{iop}	(13) Y_{iop}	(14) Y_{iop}	(15) Y_{iop}	(16) Y_{iop}
16	movenumber	-0.139	-0.0976	0.628	0.574	-0.156	-0.132	0.218	0.115	-0.211	-0.523	0.0866	0.0453
		(0.294)	(0.284)	(0.453)	(0.451)	(0.334)	(0.328)	(0.508)	(0.512)	(0.574)	(0.579)	(0.302)	(0.289)
	Constant	-2.031**	-2.592**	-3.887***	-3.699***	1.537	3.530**	-2.807*	-2.453	-0.125	0.143	-3.980***	-1.145
		(0.842)	(1.157)	(1.173)	(1.207)	(1.599)	(1.717)	(1.505)	(1.538)	(2.475)	(2.570)	(0.884)	(1.136)
17	movenumber	0.434	0.520*	-0.756	-2.346	0.749**	0.900**	-1.675	-4.770	-1.743	-3.346	0.833***	0.730**
		(0.315)	(0.313)	(1.132)	(3.032)	(0.359)	(0.375)	(1.124)	(4.532)	(1.245)	(2.494)	(0.316)	(0.306)
	Constant	1.921	-1.440	6.632***	2.905	0.160	-10.12**	5.787**	1.269	-1.788	-5.499	8.016***	-1.384
		(2.750)	(4.863)	(2.567)	(3.813)	(4.920)	(5.138)	(2.561)	(3.125)	(4.101)	(4.754)	(2.354)	(3.513)
18	movenumber	0.135	0.200	1.251***	1.272***	0.761**	0.815**	0.287	0.454	0.974*	0.823*	0.739**	0.771***
		(0.293)	(0.327)	(0.380)	(0.363)	(0.353)	(0.361)	(0.396)	(0.355)	(0.574)	(0.442)	(0.288)	(0.285)
	Constant	0.339	0.413	0.361	1.794	0.660	-0.468	1.443	1.586	-3.652	-0.306	-0.862	-0.828
		(0.970)	(1.229)	(1.269)	(1.321)	(2.065)	(2.392)	(1.197)	(1.356)	(2.831)	(2.873)	(0.913)	(1.236)
	Observations	8352	8352	8136	8136	8856	8856	6840	6840	4968	4968	9270	9270
	Number of cases	464	464	452	452	492	492	380	380	276	276	515	515
	Number of alternative regions	18	18	18	18	18	18	18	18	18	18	18	18

Note: Standard errors in parentheses; Prob >chi2 = 0.0000; * p<0.10, ** p<0.05, *** p<0.01; Independent variable*:* Y_{iop} is the likelihood of individual *i* migrating from origin *o* to alternative destination region *p.*

Chapter 4
Regional Migration and Remittances: Evidence from Indonesia

4.1 Introduction

Some researchers have shown that remittances are important for economic development. Aggarwal, Demirgüç-Kunt, and Pería (2011) find that remittances have a positive and significant effect on the development of the financial sector based on the ratio of bank deposits and bank credit to gross domestic products (GDP) in developing countries. Besides, the research by Yang (2011) describes remittances as constituting the second-largest money flow to developing countries after foreign direct investment (FDI) compared with other sources of money flow, such as portfolio investment and official development assistance (ODA). On the country level, De Haas (2006) reports for Southern Morocco that regional migration and international migration have an impact on regional development through remittances.

Migration refers to people moving from one place to another place in search of a better living for various reasons, which can be related to their job or career, education, family, security, health, environment, and so on. Migration is well-being enhancing if people gain a higher income, a better or higher education, a happier family life, better health condition or feel more secure or comfortable. The reasons for moving are often connected to unsatisfactory conditions existing in the home region. For example, the education-related reason might be linked to low quality of education in the home region, causing migrants to decide to move with an education-related purpose. The purpose of migration in this case is an individual characteristic that indicates the aim or the objective of finding a better

education. Therefore, the reason and the purpose are related to each other as an individual factor. Additionally, better conditions in the destination region than in the home region can drive migrants to move to the destination region. In this case there are region-specific factors based on the comparison of destination and origin regions, for example income per capita.

After migrants have moved to their destination region, an activity that they often engage in is money transfer, so-called remittances. Migrants transfer money to their relatives or families in the origin location as remittances by means of cash or money transfer services. Against this background, the objective of this study is to empirically examine some determinant factors of remittances. There are gaps in the literature as to determinant variables of remittances that are related to the employment status, education level and age. This study's research question is: Are self-employment, tertiary-education level, and young age significant determinant variables of remittances?

Chapter 4 proceeds as follows. Section 4.2 presents the literature on migration and the previous studies regarding the determinants of remittances. Moreover, this section develops the hypotheses about the determinants of remittances. Section 4.3 describes the data that are used in this study. The data are individual-level data on regional migration and remittances in Indonesia and regional data of Indonesia. In addition, the variable definitions are presented in this section. Section 4.4 explains the main model and the econometric settings. Section 4.5 presents the findings of the main specification and of some extensions. Finally section 4.6 summarizes the findings, describes the contribution and the limitation of the study, and provides some further study suggestions and possible policy implications.

4.2 Literature and Hypotheses

The next subsection – section 4.2.1 – specifically discusses the literature on migration and provides a definition of migration and the type of migration that is referred to in this study. The following subsection – section 4.2.2 – derives three hypotheses.

4.2.1 Literature

Lee (1966, p. 49) defines migration as "a permanent or semi-permanent change of residence". A change of residence can be interpreted as moving from one location to another location. The locations can be in the same region or in different regions and in the same country or in different countries. This study uses regional migration which is defined as migration within the same country; it can be between cities which are located in the same region (within-region) or in different regions (between-region). The regions have regional characteristics that

can attract people, such as economic parameters, density, and so on. Also geometrical distance across regions can play a role.

People migrate for various purposes, which can be related to their job or career, education, family, security, health, environment, and so on. They also might have migration experience that is they might have migrated before from one region to another for one or several times.

Remittances can be considered as an essential element of the long-term commitment and understanding between migrants and their families (Stark & Lucas, 1988). Moreover, Rapoport and Docquier (2006) explain the economics of remittances based on two aspects, microeconomics and macroeconomics. From the microeconomics perspective, researchers focus on the determinants of remittances at the individual level in a family. Rapoport and Docquier (2006) summarise some of the personal motives of remittances, such as altruism – concern for others' welfare –, compensation for taking care of the migrants' properties and families, to gain an inheritance, and strategic reasons. Then, these motives are explained by some explanatory variables. Each explanatory variable can have a significant effect, whether positive or negative, or it can have no direct effect. The explanatory variables and each effect are: migrants' income (positive), educational level (no direct effect), duration of stay (negative for altruism and strategic reasons but no direct effect for the other motives), distance to the recipients (negative for altruism and inheritance reasons but no direct effect for the other motives), recipients' income (negative for altruism and strategic reasons but no direct effect for inheritance motive), and recipients' assets (positive for inheritance motive but no direct effect for the other motives)

In the Asian context, Niimi, Pham, and Reilly (2009) study the determinants of remittances in the regional migration case in Vietnam. They find that migrants in Vietnam remit to have reciprocal funding from their families and to save some money to face the economic uncertainty in the destination region. Still in the Asian context, Liu and Reilly (2004) study remittances sent to rural families in China. They find that the majority of migrants (85 per cent) send money to their relatives. The higher the migrants' income, the more money they transfer.

From the macroeconomics perspective, researchers focus on the effects of remittances on economic growth. Nsiah & Fayissa (2013) find that remittances have a positive and significant effect on economic growth for Africa, Asia, and Latin America and the Caribbean region as a group of region as well in each 29 countries, 14 countries, and 21 countries, respectively. Giuliano & Ruiz-Arranz (2009) study 100 developing countries and find that remittances increase economic growth in countries with less developed financial systems.

4.2.2 Hypotheses

This research examines remittances in the 1990s. Some studies exist on remittances in the 1990s. Hoddinott (1994) explores the determinant factors of remittances, such as migrants' earnings (positive), age (positive), education (positive), land received from parents, marital status, number of adult sons of the migrant's parents (positive), and number of dependents residing in the parental home. Merkle and Zimmermann (1992) study remittances and savings in the context of international migration in Germany. Although this study examines migration in the global context, it provides some results to support further the research on the determinants of remittances. It finds some variables to be determinant factors of remittances, such as the number of children living in the home country (positive), the number of persons in the household (negative), marital status (married (positive)), spouse living in the home country (positive), age, years of living in Germany, household income (positive), education in the home and host country, and owner of real estate (positive).

This research develops three hypotheses based on some arguments from the literature. The hypotheses deal with different aspects of human capital, such as employment status, education level, and age group.

Firstly, Kendall, Standish, Liu, and Naurath (2013) conduct surveys regarding remittances in South Asia and Indonesia. They descriptively study the frequency of remittances for some individual characteristics. The results show that full-time self-employed people are ranked first in sending remittances (frequencies); 82 percent of this group send remittances. The findings are relevant to the study of the determinant factors of individual characteristics on remittances in Indonesia. Kendal et al. (2013) study the frequencies of remittances; there is no evidence, however, that full-time self-employed people sends larger amounts of money than other groups.

Migrants who move to the destination region can become entrepreneurs with a self-employed status. In this case self-employment is a proxy for entrepreneurship (Stuetzer et al., 2016). This status, of course, entails some risks. However, with some probability migrants might be successful. This chance of earning some profit and the survival in the market might lead them to send more money. Moreover, self-employed people might run businesses that relate to family businesses at home, for example they trade in raw materials, services, and products with their relatives.

Following these arguments, there is a reason to formulate as hypothesis that the self-employment status group has a significant and positive association with the total amount of money sent through remittances. The following hypothesis takes account of the presumed relation:

Hypothesis 1: The self-employed status group is positively associated with remittances.

Secondly, Niimi et al. (2009) study the determinants of remittances in Vietnam and find that the education level of migrants has a positive relationship with remittances. In addition, Kendall et al. (2013) find that on average South Asian and Indonesian people who have a higher education level tend to be more likely to send remittances, and there is evidence that they send more money than the lower-level education group does. Therefore, this study builds the hypothesis that the tertiary level of education has a positive and significant association with remittances:

Hypothesis 2: The tertiary level of education is positively associated with remittances.

Thirdly, this study gives the rationale that people who belong to the group aged above 50 would probably send money only to their children; on the other hand, younger people will have a responsibility to send money to their children, parents, or siblings. Thus, this research develops the hypothesis that the relatively young age group of migrants (younger than 50) would significantly and positively remit more money than the older age group of migrants, the group that consists of members with a minimum age of 50 years. The following hypothesis explains the assumed association:

Hypothesis 3: The relatively young age group of migrants is positively associated with remittances.

4.3 Data

This study uses two secondary data set resources, the Indonesian Family Life Survey (IFLS) and the Statistics Indonesia (*Badan Pusat Statistik* – BPS).

As described in Chapter 3, the IFLS is a longitudinal individual, family, and community survey in Indonesia that includes information about migration histories and migrants' characteristics. There are currently five waves of the survey, IFLS-1 in 1993, IFLS-2 in 1997, IFLS-3 in 2000, IFLS-4 in 2007, and IFLS-5 in 2014/2015. The IFLS was conducted by RAND in collaboration with *Lembaga Demografi,* University of Indonesia.

This research applies IFLS-1, the 1993 wave. IFLS-1 was chosen because remittance data are only available in that wave. The map in Figure 4.1 identifies the 13 provinces (IFLS provinces) in IFLS-1 as the survey locations. In these

locations the respondents were asked about their personal data and migration histories. The migration histories themselves – from the origin to the destination region – cover more than 13 regions, because Indonesia comprised 27 regions in the period from 1990 to 1992. In the following, the term province means the same as the term region.

Figure 4.1 IFLS-1 Coverage
(Source: http://www.rand.org/labor/FLS/IFLS.html)

This research uses secondary data and generates some data and variables. A two-step procedure is chosen with the before-migration phase as the first step and the after-migration phase as the second step.

In the first step, migrants have to choose the destination region. This step generates a variable (*predictprovi*) and its values, which will be used in the second step. The following explanation describes the data and variable formulations for the first step.

The secondary data of the period 1990–1992 from the BPS are used to examine the region-specific determinants of the region choice. The independent variables X_{iop} are defined based on equations (1.1) to (1.8) below. The distances are measured using the geometrical distance between the capital cities of the origin–destination regions (see (1.1)). Schwartz (1973) evaluates the effect of distance on migration flows. People need more money to move farther, and they have less information about remoter destinations. Therefore, distance exerts a negative effect on migration flows because of the monetary costs and information costs. The other independent variables are constructed by the ratio of the variables of the destination region *p* and the origin region *o* (see (1.2) to (1.8)). The density (see 1.8) can be relevant in this study based on the idea that in a crowded region, people can have more interactions in the social community.

The independent variables X_{iop} are developed as follow:

distance (DI) = geometrical DI between the capital city of destination *p* and *o* (1.1)

$$micro\ and\ small\ entrerprises\ number\ (MS)\ ratio = \frac{MS_p}{MS_o} \quad (1.2)$$

$$micro\ and\ small\ entrerprises\ number\ growth\ index\ (MSG)\ ratio = \frac{MSG_p}{MSG_o} \quad (1.3)$$

$$MSG_p = \frac{\dot{\overline{MS}}_p - Min\ (\dot{\overline{MS}})}{Max(\dot{\overline{MS}}) - Min\ (\dot{\overline{MS}})} \quad (1.3.1)$$

$$MSG_o = \frac{\dot{\overline{MS}}_o - Min\ (\dot{\overline{MS}})}{Max(\dot{\overline{MS}}) - Min\ (\dot{\overline{MS}})} \quad (1.3.2)$$

$$income\ per\ capita\ (IN)\ ratio = \frac{IN_p}{IN_o} \quad (1.4)$$

$$income\ per\ capita\ growth\ index\ (IG)\ ratio = \frac{IG_p}{IG_o} \quad (1.5)$$

$$IG_p = \frac{\dot{\overline{IN}}_p - Min\ (\dot{\overline{IN}})}{Max(\dot{\overline{IN}}) - Min\ (\dot{\overline{IN}})} \quad (1.5.1)$$

$$IG_o = \frac{\dot{\overline{IN}}_o - Min\ (\dot{\overline{IN}})}{Max(\dot{\overline{IN}}) - Min\ (IN)} \quad (1.5.2)$$

$$unemployment\ rate\ (UR)\ ratio = \frac{UR_p}{UR_o} \quad (1.6)$$

$$unemployment\ growth\ index(UG)\ ratio = \frac{UG_p}{UG_o} \quad (1.7)$$

$$UG_p = \frac{\dot{\overline{UR}}_p - Min\ (\dot{\overline{UR}})}{Max(\dot{\overline{UR}}) - Min\ (\dot{\overline{UR}})} \quad (1.7.1)$$

$$UG_o = \frac{\dot{\overline{UR}}_o - Min\ (\dot{\overline{UR}})}{Max(\dot{\overline{UR}}) - Min\ (\dot{\overline{UR}})} \quad (1.7.2)$$

$$density\ (DE)\ ratio = \frac{DE_p}{DE_o} \quad (1.8)$$

The summary statistics of the independent variables X_{iop} are presented in Table 4.3 in the Appendix. In addition, the correlation matrix of each variable of the model is presented in Table 4.4 in the Appendix.

For the first step, after some data cleaning, there are 9,622 migrant observations in the 13 IFLS provinces (regions). These observations show the migration histories between 1924 and 1992. This study uses the last experienced regional migration of the migrant (migration across provinces) in the years 1990–1992, because, based on the questionnaire of IFLS-1, the remittances are made in the years 1990–1992. 5,349 observations are dropped because they are not last migration events in the period between 1924 and 1992. Of the remaining 4,273 individuals who migrated between 1924 and 1992 and experienced a last migration event, further 3,552 individuals are dropped as the last migration event

The migrants move from a total of 22 origin regions to a total of 17 alternative destination regions[a] (see Table 4.9 in the Appendix for the region

[a] The West Java region with its capital city Bandung is used as base region to run the model. The

codes and Figure 4.2 in the Appendix for their location on the map of Indonesia). Therefore, there are 12,240 observations, meaning 720 individuals facing 17 alternative regions: 720 individuals times 17 alternative regions equals 12,240 observations.

For the second step, this research uses the related IFLS-1 data for the 720-individual sample. In this case the variables are identified for the period from 1990 to 1992. Moreover, this step includes the data *predictprovi* as the results of the first step. The summary statistics of data for the second step are presented in Table 4.6 in the Appendix. For instance, the observations consist of 23.19 per cent self-employed individuals out of 720. In addition, the correlation matrix of each variable of the model is presented in Table 4.7 in the Appendix. The low correlation coefficients in the correlation matrix indicate that there is no multicollinearity.

4.4 Method

The first step applies the region choice model to the regional migration context, which is developed based on McFadden (1974): the alternative-specific conditional logit model. In principle this model is similar to the model used in the previous chapter (Chapter 3). In the end this model produces an estimated value for $predictprovi_{iop}$ (see (M1)) as the prediction result of the likelihood of each individual *i* coming from origin region *o* and choosing destination region *p*.

$$predictprovi_{iop} = X_{iop}\,\beta_j + Z_{io}\,\gamma_p + \varepsilon \qquad \text{(M1)}$$

The dependent variable $predictprovi_{iop}$ is equal to 1 if migrant *i* chooses region *p* as a destination, and it is equal to 0 otherwise. Moreover, X_{iop} represents determinant variables that vary across alternative region choices *p*, Z_{io} represents the characteristics of individuals *i* that are constant across alternative region choices, and ε is the error term. This phase aims to obtain $predictprovi_{ip}$ to be included as control variables in the next phase.

The individual characteristics, restricted to the data available in the data sets, become explanatory or control variables in the model. These variables are migrants' experience of moving (*movenumber*) and their purpose of migration (e.g. to find an education (*purposeedu*)). The migrants' experience of migrating is reflected in the number of migration events already undertaken. The more migration events, the more experience migrants have in deciding on the destination region. Migrants have a purpose for migration; they will choose a region based on their purpose. In this case the purpose of finding an education is

model requires one alternative destination region as a base region.

used as a control because this control can give convergence model results after conducting some iterations.

In the second step, migrants start to remit and the determinant variables of remittances are examined. The model used in this step is the main econometric model, where the predictive values of the region choices model of the first step are used as control variables to test the research hypotheses. The second model applies the ordinary least square model (OLS) model, because the dependent variable of the model is a continuous variable explained by some independent variables and control variables.

Model M2 uses remittance[b] (*logremittance*s) as dependent variable and self-employment status (*selfemployed*), tertiary education (*terteducation*), and young age group (*agelessthan50*) as independent variables to test the hypotheses. In addition, some control variables are used, such as gender, household size, marital status, and predicted values of destination regions $predictprovi_{ip}$ from model M1 with the highest number of explanatory variables (parameters) and the lowest score of Akaike's information criterion (AIC)[c] that show the truest model. The $predictprovi_{ip}$ replaces the dummy of the destination region as a control variable. It is a prediction result of the likelihood of each individual choosing the destination region. It is better than the dummy of the destination region, because it considers the determinants of region choice. Moreover, it has a value between 0 and 1 instead of the value of the dummy variable of the destination region, which has the value of exactly 0 or 1. The notations are defined as following: X refers to control variables with a total of k; $\beta_1, \beta_2,$ and β_3 are the coefficients that are going to be tested; and ε is the error term.

$$logremittances_i = \beta_0 + \beta_1\, selfemployed_i + \beta_2\, terteducation_i + \beta_3\, agelessthan50_i + \beta_4\, predictprovi_{ip} + \beta_j X_{ik} + \varepsilon \quad \text{(M2)}$$

[b] This research uses the log value of remittances to control for skewness. The remittances variable is positively skewed with a longer right tail, and the mass of the distribution is concentrated on the left. Remittances deal with money; increasing or decreasing the amount of money is about individuals' point of view [Re-write this last sentence!]. For example, the value of ten thousand is big for lower-income migrants, such as those with annual revenue of one hundred thousand, but it is small for higher-income migrants, for example with an annual income of one million. By taking the log value of this variable, a one-unit change in the log value of the variables can reduce the relative different values of money. These methods, using the log value, are also employed by Hoddinott (1994).

[c] The AIC is used as a criterion for model selection when it tries to increase the number of explanatory variables. The lowest score of the AIC leads to the simplest and truest model (Bozdogan, 1987).

4.5 Results

Model M1(7) meets the criterion to have the highest number of explanatory variables (parameters) and the lowest score of the Akaike's information criterion (AIC), so the $predictprovi_{ip}$ of model M1(7) is used as a control variable in model M2.

The results of model M1 can be explained as follows. There are robust and significant explanatory variables in model M1, namely the distance and unemployment rate (see Table 4.1). The distance (from the origin region to the destination region) is negatively and significantly related to the region to be chosen; this means that larger distance decreases the likelihood of that region being chosen as a migration destination region, ceteris paribus. This finding is robust for all the models in M1 (M1(1) to M1(6)). On the other hand, the larger number of small and medium enterprises as a proxy for entrepreneurship can increase the likelihood of that region being chosen as a migration destination region, ceteris paribus. However, these results only apply to models M1(1), M1(3), M1(5), and M1(6). A higher unemployment rate in a region can decrease significantly the probability of that region being chosen as a migration destination, ceteris paribus. Furthermore, a higher density of a region can increase significantly the probability of that region being chosen as a migration destination, ceteris paribus, as shown by M1(6) and M1(7). Table 4.5 in the Appendix shows the complete region choice model results.

Using the predicted values of model M1 (*predictprovi*) in model M2, the results show seven models (see Table 4.2, M2(1) to M2(7)) that migrants' status of self-employment has a significant and positive correlation with remittances. This finding indicates that there is evidence to support hypothesis 1 that self-employment is significantly and positively correlated with the amount of remittances. Table 4.8 in the Appendix shows the complete remittances and migration model results.

The individual level of education does not have a significant and robust relationship with remittances at least it is consistent for model M2(3) to M2(7). There is no evidence to support hypothesis 2. On the contrary, the young group of migrants (aged less than 50 years) has a significant and positive correlation with remittances. There is evidence to support hypothesis 3 that the young group of migrants (aged less than 50) would significantly and positively remit more money than the old group of migrants.

This study also tests the hypotheses by applying M2 without using M1 with the additional explanatory variables, such as the distance from the origin to the destination region (*distancetodest*) and its square term, to check the non-linearity relationship, and the income of the migrants (*logincome*) in the destination region. The results (see M2(8) and M2(9)) remain the same. Furthermore, the results

show that *distancetodest* has a positive and significant relationship with remittances. The relationship is linear instead of non-linear. However, the income of the migrants has an insignificant relationship with remittances. The findings show that migrants who move further might remit more as compensation for their distant relationship with their families and this activity does not depend on their income. Moreover, in this study the correlation between *distancetodest* and *logincome* is 0.0035 and insignificant (see Table 4.7 (Part 2 out of 3) in the Appendix).This indicates that migrants who move further away do not earn more but they remit more.

Table 4. 1 Region Choices Model (Primary: Region-Specific Variables) Dependent Variable: *predictprovi* (Step1)

Model	**M1(1)**	**M1(2)**	**M1 (3)**	**M1(4)**	**M1(5)**	**M1(6)**	**M1(7)**
Distance	-0.00556***	-0.00529***	-0.00557***	-0.00530***	-0.00507***	-0.00476***	-0.00471***
	(0.000229)	(0.000238)	(0.000231)	(0.000238)	(0.000233)	(0.000240)	(0.000241)
Microandsmallenterprise	0.0370***	0.0101	0.0371***	0.0103	0.0253**	0.0244**	0.0124
	(0.0127)	(0.0115)	(0.0127)	(0.0115)	(0.0125)	(0.0114)	(0.0134)
Incomepercapita	-1.011***		-1.014***		-0.360*		0.554*
	(0.188)		(0.189)		(0.215)		(0.303)
Unemploymentrate		-1.089***		-1.161***		-0.861***	-1.149***
		(0.224)		(0.235)		(0.224)	(0.279)
Density			0.000251	0.00236	0.000745	0.00263**	0.00304**
			(0.00162)	(0.00163)	(0.00144)	(0.00127)	(0.00131)
Microandsmallenterprise_growth					-0.0932***	-0.0968***	-0.0972***
					(0.0328)	(0.0321)	(0.0320)
Incomepercapita_growth					-0.102**	-0.101**	-0.111**
					(0.0429)	(0.0436)	(0.0444)
Unemploymentrate_growth					-0.557***	-0.567***	-0.670***
					(0.108)	(0.0980)	(0.121)
Observations	12240	12240	12240	12240	12240	12240	12240
AIC	1660.9	1655.1	1662.8	1655.6	1596.9	1579.3	1578.0
BIC	2038.9	2033.1	2048.3	2041.0	2004.6	1987.0	1993.1
Number of cases	720	720	720	720	720	720	720
Number of alternative regions	17	17	17	17	17	17	17

Note: Standard errors in parentheses; Prob >chi2 = 0.0000
* p<0.10, ** p<0.05, *** p<0.01

Table 4.2 Remittances and Migration Model;
Dependent Variable: Log of Remittances (*logremittances*) (Step 2)

Model	M2(1)	M2(2)	M2(3)	M2(4)	M2(5)	M2(6)	M2(7)	M2(8)	M2(9)
SelfEmployed	0.779**	0.787**	0.825***	0.882***	0.886***	0.916**	0.840**	0.900**	0.838**
	(0.315)	(0.316)	(0.316)	(0.314)	(0.316)	(0.359)	(0.382)	(0.360)	(0.355)
PublicWorker	1.271***	1.271***	1.230***	1.296***	1.303***	1.337***	1.131***	1.365***	1.328***
	(0.314)	(0.314)	(0.314)	(0.330)	(0.334)	(0.369)	(0.378)	(0.367)	(0.370)
PrivateWorker	0.392	0.431	0.378	0.440	0.447	0.489	0.462	0.517	0.437
	(0.401)	(0.408)	(0.409)	(0.420)	(0.422)	(0.472)	(0.490)	(0.474)	(0.478)
FamilyWorker	0.485	0.485	0.445	0.432	0.431	0.448	0.442	0.457	0.391
	(0.557)	(0.557)	(0.557)	(0.560)	(0.561)	(0.563)	(0.579)	(0.561)	(0.564)
terteducation		-1.314***	-0.375	-0.397	-0.363	-0.403	-0.852	-0.611	-0.577
		(0.281)	(0.397)	(0.401)	(0.448)	(0.445)	(0.528)	(0.556)	(0.561)
agelessthan50			0.984***	0.932***	0.965**	0.903**	0.832**	0.852**	0.794**
			(0.308)	(0.332)	(0.385)	(0.398)	(0.405)	(0.390)	(0.391)
Female				-0.131	-0.137	-0.0912	0.0776	-0.164	-0.162
				(0.280)	(0.283)	(0.343)	(0.411)	(0.350)	(0.350)
hhsize					0.0293	-0.0161	-0.0401	-0.00627	-0.0126
					(0.122)	(0.0787)	(0.0849)	(0.0805)	(0.0836)
married						-0.0923	-0.182	-0.0303	-0.0547
						(0.413)	(0.463)	(0.414)	(0.414)
separated						2.352	1.914	1.875	1.885
						(2.125)	(2.203)	(2.182)	(2.211)
divorced						-0.841*	-1.087**	-0.964**	-0.970**
						(0.433)	(0.517)	(0.486)	(0.482)
distancetodest								0.00172*	0.00180*
								(0.000988)	(0.000985)
distancetodestsquare								-0.000000673	-0.000000731
								(0.000000492)	(0.000000494)
logincome									0.157
									(0.146)
Constant	3.067***	3.067***	2.151***	2.244***	2.180***	2.274***	2.253**	2.188***	1.885***
	(0.171)	(0.171)	(0.298)	(0.385)	(0.507)	(0.479)	(0.952)	(0.459)	(0.532)
Control variables (Predicted value of region choice model)	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**No**	**No**
Observations	720	720	720	720	720	720	720	720	720
R-squared	0.024	0.025	0.029	0.030	0.030	0.032	0.053	0.039	0.042
Adjusted R-squared	0.019	0.018	0.021	0.020	0.019	0.017	0.016	0.022	0.023
AIC	3760.6	3762.1	3760.6	3762.4	3764.4	3768.5	3784.6	3767.2	3767.4
BIC	3783.5	3789.6	3792.7	3799.0	3805.6	3823.4	3912.8	3831.3	3836.1

Note: Robust Standard errors in parentheses;* p<0.10, ** p<0.05, *** p<0.01

4.6 Conclusion

This research makes new contributions to the migration and remittances literature. The contributions are the new explanatory variables that connect to migrants' employment status such as employment status, education level, and age group. Therefore, this research can fill in the gaps in determinant variables of remittances that are related to the new explanatory variables and answer the research question whether self-employment, tertiary-education level, and young age are significant determinant variables of remittances.

Three hypotheses are developed. Hypothesis 1, the self-employed status group is positively associated with remittances. Hypothesis 2, the tertiary level of education is positively associated with remittances. Hypothesis 3, the relatively young age of migrants is positively associated with remittances.

Migrants' status of self-employment is significantly correlated with remittances. This finding shows that there is evidence to support Hypothesis 1. The other explanatory variables, such as tertiary education and age group, can be considered as new findings of the remittances' determinant, because migrants' tertiary level of education does not have a significant association with remittances but young age of migrants has a significant association with remittances. This finding shows that there is no evidence to support Hypothesis 2, which contradicts the finding of Niimi et al. (2009) that the higher the educational level of the migrants, the higher the marginal values of the remittances. However, there is evidence to support Hypothesis 3 that the young group of migrants has a significant association with remittances. This finding of the third hypothesis also contradicts the finding of Niimi et al. (2009) that age (expressed in years) is not significantly correlated with remittances. In this study migrants' age is divided into two groups. Based on this division, the finding at least shows that there is a positive and significant relationship between the young age of migrants and remittances.

All the findings involve certain limitations: (1) there are limited data for explanatory variables of the region choices model, since the research uses data from 1990 to 1992; and (2) there are no controls for the needs of migrants' relatives regarding the money for economic reasons, for example retired parents, or personal reasons because of parent's heritage (Hoddinott, 1994), and so on.

Further research on remittances might include other explanatory or control variables that can support remittances, such as the number of financial institutions available and internet connections to send money online. Support systems that are available today include financial institutions like banks but also online and mobile systems provided by cell phone or financial service providers (Venkatesh & Bajaj, 2003). These can be formal or non-formal systems (e.g. Passas, 2003; Timberg,

2003). A further agenda that can be considered is to determine the effect of remittances on regional economic growth in Indonesia.

This study provides basis for studies which try to establish causal-effects relationship between self-employed migrants and the young group of migrants and remittances which then can be used for practical and policy recommendations. Self-employed migrants can help the economic condition through remittances not only for themselves and for their family but also for their origin region. If it is hold true, the central government should support migrants who have moved to become successful self-employed migrants in the destination region so that they can contribute to the economic development not only of the destination region but also of the origin region. The members of the relatively young group aged less than 50 years can contribute to their family through the transfer of funds. If it is hold true, both the central government and the regional government of the origin region can support the relatively young group if they want to migrate to another region as an alternative choice instead of being unemployed in the origin region.

4.7 Appendices

Table 4.3 Summary Statistics of Model M1

Variable	Obs	Mean	Std. Dev.	Min	Max
Distance	12240	1150.997	949.0545	0	5695
originDensity	12240	2178.345	4251.063	9.093778	12438.65
destDensity	12240	1007.212	2875.191	3.937608	12438.65
Density	12240	6.011078	34.30176	.0003166	1367.82
originMicroandsmallenterprise	12240	191886	199082.4	7004	587270
destMicroandsmallenterprise	12240	124479.2	165577	9773	587270
Microandsmallenterprise	12240	2.537475	6.014777	.0166414	83.8478
originMicroandsmallenterprise_growth	12240	.0160972	.01908	-.05	.13
destMicroandsmallenterprise_growth	12240	.0048235	.0392658	-.13	.04
Microandsmallenterprise_growth	12240	8.862522	13.51256	.0906167	87.60001
originUnemploymentrate	12240	3.037778	1.666923	.8	6.7
destUnemploymentrate	12240	2.523529	1.280461	.8	6.7
Unemploymentrate	12240	1.08665	.8810688	.119403	8.375
originunemploymentrate_growth	12240	.0523056	.0956492	-.09	.25
destunemploymentrate_growth	12240	.0458824	.1060043	-.16	.25
unemploymentrate_growth	12240	2.612753	2.990021	.1103448	20
origIncomepercapitaIncomepercapita	12240	1.342083	.8862696	.5	6.4
destIncomepercapita	12240	1.382353	.9173451	.5	4
Incomepercapita	12240	1.343226	1.115051	.078125	8
Incomepercapita_growth	12240	.1357083	.0191144	.07	.16
destIncomepercapita_growth	12240	.1329412	.0286501	.07	.17
Incomepercapita_growth	12240	.5695444	5.097731	-69.09794	9.422456
movenumber	12240	1.8375	1.748081	0	7
purposeedu	12240	.0694444	.2542188	0	1

Table 4.4 Correlation Table of Model M1

Variable ID		1	2	3	4	5	6	7	8	9	10
1	*Distance*	1.0000									
2	*Microandsmallenterprise*	-0.1397*	1.0000								
3	*Incomepercapita*	0.1390*	-0.2212*	1.0000							
4	*Unemploymentrate*	-0.0023	-0.0721*	0.6135*	1.0000						
5	*Density*	-0.0351*	-0.0027	0.1860*	0.3276*	1.0000					
6	*Microandsmallenterprise_ growth*	-0.0992*	0.0456*	-0.0630*	-0.0536*	0.0619*	1.0000				
7	*Incomepercapita_ growth*	-0.0594*	-0.1564*	0.0313*	0.0009	-0.0735*	0.1768*	1.0000			
8	*Unemploymentrate_ growth*	-0.1590*	0.1314*	-0.3078*	-0.1359*	-0.0911*	-0.0603*	0.0215*	1.0000		
9	*movenumber*	0.0271*	0.0615*	-0.0082	-0.0128	0.0205*	-0.0010	-0.0067	-0.0447*	1.0000	
10	*purposeedu*	-0.0124	-0.0453*	0.0373*	0.0248*	0.0042	-0.0093	-0.0238*	-0.0072	-0.1809*	1.0000

Notes: * significant at minimum 5%

Table 4.5 Region-Choices Model M1 (Complete Model, Part 1 out of 3) – First Step – Independent Variable: *predictprovi*

	Model	**M1(1)**	**M1(2)**	**M1 (3)**	**M1(4)**	**M1(5)**	**M1(6)**	**M1(7)**
	Distance	-0.00556***	-0.00529***	-0.00557***	-0.00530***	-0.00507***	-0.00476***	-0.00471***
		(0.000229)	(0.000238)	(0.000231)	(0.000238)	(0.000233)	(0.000240)	(0.000241)
	Microandsmallenterprise	0.0370***	0.0101	0.0371***	0.0103	0.0253**	0.0244**	0.0124
		(0.0127)	(0.0115)	(0.0127)	(0.0115)	(0.0125)	(0.0114)	(0.0134)
	Incomepercapita	-1.011***		-1.014***		-0.360*		0.554*
		(0.188)		(0.189)		(0.215)		(0.303)
	Unemploymentrate		-1.089***		-1.161***		-0.861***	-1.149***
			(0.224)		(0.235)		(0.224)	(0.279)
	Density			0.000251	0.00236	0.000745	0.00263**	0.00304**
				(0.00162)	(0.00163)	(0.00144)	(0.00127)	(0.00131)
	Microandsmallenterprise_growth					-0.0932***	-0.0968***	-0.0972***
						(0.0328)	(0.0321)	(0.0320)
	Incomepercapita_growth					-0.102**	-0.101**	-0.111**
						(0.0429)	(0.0436)	(0.0444)
	Unemploymentrate_growth					-0.557***	-0.567***	-0.670***
						(0.108)	(0.0980)	(0.121)
Region								
1	*movenumber*	-0.206	-0.214	-0.206	-0.213	-0.148	-0.151	-0.138
		(0.951)	(0.930)	(0.951)	(0.930)	(0.950)	(0.938)	(0.936)
	purposeedu	-18.03	-16.94	-19.05	-17.05	-18.46	-18.26	-18.99
		(1853.0)	(1433.7)	(3071.9)	(1442.6)	(3352.8)	(3734.0)	(5914.8)
	Constant	-3.455**	-4.941***	-3.442**	-4.861***	-5.292***	-5.877***	-6.852***
		(1.684)	(1.630)	(1.685)	(1.629)	(1.738)	(1.670)	(1.756)
2	*movenumber*	-0.164	-0.144	-0.165	-0.143	-0.119	-0.108	-0.0940
		(0.283)	(0.272)	(0.283)	(0.270)	(0.262)	(0.253)	(0.251)
	purposeedu	-5.763***	-5.299***	-5.774***	-5.400***	-4.995***	-4.610***	-4.461***
		(1.606)	(1.579)	(1.609)	(1.586)	(1.559)	(1.542)	(1.530)
	Constant	-0.0465	-0.861	-0.0340	-0.761	-0.500	-0.808	-1.154
		(0.884)	(0.821)	(0.888)	(0.820)	(0.837)	(0.793)	(0.804)
3	*movenumber*	0.0698	0.0789	0.0697	0.0798	0.106	0.109	0.115
		(0.227)	(0.220)	(0.227)	(0.218)	(0.223)	(0.217)	(0.215)
	purposeedu	-2.406**	-2.087*	-2.416**	-2.175*	-1.873	-1.602	-1.531
		(1.137)	(1.104)	(1.139)	(1.112)	(1.146)	(1.127)	(1.114)
	Constant	-0.696	-1.236*	-0.685	-1.134	-0.818	-1.021	-1.144
		(0.734)	(0.697)	(0.738)	(0.697)	(0.744)	(0.717)	(0.710)
4	*movenumber*	-0.341	-0.332	-0.341	-0.331	-0.312	-0.311	-0.315
		(0.405)	(0.390)	(0.404)	(0.389)	(0.399)	(0.390)	(0.385)
	purposeedu	-18.91	-17.74	-19.94	-17.85	-17.69	-18.11	-17.72
		(2411.7)	(1872.1)	(4024.3)	(1896.0)	(2159.5)	(3213.3)	(2842.3)
	Constant	0.395	-2.379**	0.415	-2.261**	-1.149	-2.255**	-4.000***

Table 4.5 Region-Choices Model M1 (Complete Model, Part 2 out of 3) – First Step – Independent Variable: *predictprovi*

	Model	M1(1)	M1(2)	M1 (3)	M1(4)	M1(5)	M1(6)	M1(7)
5	*movenumber*	0.109	0.0911	0.109	0.0929	0.319	0.310	0.311
		(0.176)	(0.179)	(0.176)	(0.175)	(0.227)	(0.226)	(0.227)
	purposeedu	-2.545**	-2.268*	-2.553**	-2.336*	-3.021*	-2.843*	-2.718*
		(1.261)	(1.254)	(1.262)	(1.256)	(1.564)	(1.558)	(1.555)
	Constant	-0.0162	-0.993**	-0.00375	-0.900*	-2.359***	-2.776***	-3.244***
		(0.485)	(0.472)	(0.491)	(0.468)	(0.860)	(0.842)	(0.880)
6	*movenumber*	0.0653	0.00707	0.0654	0.00455	0.0596	0.0114	-0.00672
		(0.164)	(0.202)	(0.164)	(0.205)	(0.162)	(0.197)	(0.208)
	purposeedu	-15.40	-14.81	-16.38	-14.85	-15.36	-15.36	-16.21
		(1046.7)	(739.3)	(1703.5)	(733.1)	(918.4)	(938.2)	(1348.2)
	Constant	-1.079**	-2.340***	-1.077**	-2.387***	-0.436	-1.532***	-1.657***
		(0.419)	(0.575)	(0.419)	(0.582)	(0.442)	(0.590)	(0.620)
7	*movenumber*	0.0986	0.101	0.0985	0.0999	0.0885	0.0848	0.0879
		(0.0945)	(0.0903)	(0.0945)	(0.0903)	(0.0985)	(0.0963)	(0.0941)
	purposeedu	-1.692	-1.516	-1.713	-1.665	-1.645	-1.622	-1.554
		(1.152)	(1.136)	(1.161)	(1.145)	(1.163)	(1.167)	(1.154)
	Constant	2.163***	1.075***	2.162***	1.082***	-0.0523	-0.000259	-1.012
		(0.463)	(0.321)	(0.463)	(0.323)	(0.603)	(0.366)	(0.668)
9	*movenumber*	0.0157	0.0202	0.0160	0.0229	-0.00655	-0.0119	-0.0114
		(0.133)	(0.135)	(0.133)	(0.135)	(0.129)	(0.130)	(0.130)
	purposeedu	0.463	0.350	0.463	0.347	0.150	0.0940	0.0480
		(0.777)	(0.782)	(0.777)	(0.784)	(0.778)	(0.775)	(0.778)
	Constant	-0.722**	-1.204***	-0.722**	-1.242***	-0.939***	-1.408***	-1.563***
		(0.294)	(0.326)	(0.294)	(0.329)	(0.299)	(0.327)	(0.341)
10	*movenumber*	0.0937	0.0843	0.0940	0.0870	0.0753	0.0701	0.0665
		(0.149)	(0.150)	(0.149)	(0.150)	(0.144)	(0.145)	(0.144)
	purposeedu	3.125***	2.987***	3.125***	2.985***	2.943***	2.875***	2.833***
		(0.656)	(0.653)	(0.656)	(0.655)	(0.637)	(0.634)	(0.634)
	Constant	-1.417***	-1.762***	-1.417***	-1.799***	-1.322***	-1.720***	-1.728***
		(0.353)	(0.374)	(0.353)	(0.377)	(0.345)	(0.364)	(0.364)
11	*movenumber*	0.0639	0.0608	0.0643	0.0639	0.0463	0.0422	0.0409
		(0.141)	(0.142)	(0.141)	(0.143)	(0.134)	(0.133)	(0.133)
	purposeedu	0.405	0.305	0.405	0.304	0.169	0.105	0.0699
		(0.886)	(0.881)	(0.886)	(0.883)	(0.866)	(0.859)	(0.859)
	Constant	-0.375	-1.007***	-0.374	-1.043***	-0.439	-0.949***	-1.132***
		(0.318)	(0.347)	(0.318)	(0.351)	(0.306)	(0.331)	(0.348)
12	*movenumber*	0.000953	-0.0179	0.00140	-0.0143	-0.0346	-0.0455	-0.0590
		(0.179)	(0.183)	(0.179)	(0.183)	(0.211)	(0.213)	(0.223)
	purposeedu	-0.966	-1.042	-0.968	-1.053	-2.413*	-2.378*	-2.693*
		(1.313)	(1.312)	(1.314)	(1.315)	(1.431)	(1.421)	(1.451)
	Constant	-0.0887	-1.389***	-0.0860	-1.440***	-1.582***	-2.496***	-3.133***
		(0.399)	(0.450)	(0.400)	(0.455)	(0.533)	(0.538)	(0.659)

Table 4.5 Region-Choices Model M1 (Complete Model, Part 3 out of 3)
– First Step –
Independent Variable: *predictprovi*

	Model	M1(1)	M1(2)	M1 (3)	M1(4)	M1(5)	M1(6)	M1(7)
13	*movenumber*	0.153	0.134	0.154	0.136	0.122	0.101	0.0938
		(0.186)	(0.194)	(0.186)	(0.195)	(0.181)	(0.189)	(0.192)
	purposeedu	-0.395	-0.535	-0.396	-0.547	-0.335	-0.375	-0.417
		(1.347)	(1.388)	(1.348)	(1.396)	(1.373)	(1.439)	(1.475)
	Constant	-1.462***	-2.593***	-1.462***	-2.687***	-0.676	-1.791***	-1.858***
		(0.467)	(0.582)	(0.467)	(0.592)	(0.474)	(0.586)	(0.593)
14	*movenumber*	-0.456	-0.495	-0.454	-0.482	-0.458	-0.461	-0.483
		(0.989)	(1.011)	(0.988)	(1.005)	(0.976)	(0.982)	(0.993)
	purposeedu	-13.92	-13.53	-15.04	-13.54	-14.46	-14.20	-15.29
		(3069.7)	(2174.5)	(5402.2)	(2296.8)	(3720.7)	(3359.2)	(5465.1)
	Constant	-2.561*	-4.074***	-2.554*	-4.113***	-2.865**	-3.915***	-4.397***
		(1.450)	(1.483)	(1.449)	(1.480)	(1.435)	(1.454)	(1.486)
15	*movenumber*	0.247	0.245	0.247	0.248	0.234	0.232	0.232
		(0.183)	(0.182)	(0.183)	(0.182)	(0.179)	(0.174)	(0.175)
	purposeedu	0.0104	-0.145	0.0135	-0.100	0.0493	0.0348	-0.00746
		(1.403)	(1.398)	(1.402)	(1.383)	(1.393)	(1.358)	(1.361)
	Constant	-0.388	-1.375***	-0.381	-1.387***	0.000922	-0.628	-0.853*
		(0.465)	(0.484)	(0.466)	(0.484)	(0.467)	(0.478)	(0.498)
16	*movenumber*	0.319	0.329	0.319	0.335	0.308	0.320	0.326
		(0.238)	(0.243)	(0.238)	(0.244)	(0.228)	(0.229)	(0.231)
	purposeedu	-16.10	-15.66	-17.11	-15.66	-17.32	-17.50	-17.75
		(1499.5)	(1174.3)	(2477.4)	(1173.8)	(2926.5)	(3279.4)	(3674.4)
	Constant	-1.455**	-1.464**	-1.454**	-1.466**	-0.785	-0.880	-0.725
		(0.636)	(0.642)	(0.637)	(0.645)	(0.623)	(0.621)	(0.631)
17	*movenumber*	-0.222	-0.263	-0.221	-0.259	-0.232	-0.243	-0.257
		(2.999)	(3.097)	(3.002)	(3.113)	(1.094)	(1.060)	(1.019)
	purposeedu	-11.73	-11.03	-12.72	-11.02	-14.31	-14.49	-15.61
		(4079.1)	(2904.7)	(6711.1)	(2895.5)	(2673.1)	(2887.1)	(4140.4)
	Constant	5.409	3.736	5.418	3.742	2.374	1.254	0.242
		(3.304)	(3.395)	(3.307)	(3.410)	(1.694)	(1.648)	(1.730)
	Observations	12240	12240	12240	12240	12240	12240	12240
	AIC	1660.9	1655.1	1662.8	1655.6	1596.9	1579.3	1578.0
	BIC	2038.9	2033.1	2048.3	2041.0	2004.6	1987.0	1993.1
	Number of cases	720	720	720	720	720	720	720
	Number of alternative regions	17	17	17	17	17	17	17

Note: Standard errors in parentheses; Prob >chi2 = 0.0000; * p<0.10, ** p<0.05, *** p<0.01

Table 4. 6 Summary Statistics of Model M2

Variable	Obs	Mean	Std. Dev.	Min	Max
logremittances	720	3.691901	3.315048	2.302585	20.72327
SelfEmployed	720	.2319444	.4223671	0	1
PrivateWorker	720	.3013889	.4591802	0	1
PublicWorker	720	.0958333	.2945672	0	1
FamilyWorker	720	.0486111	.2152031	0	1
terteducation	720	.0041667	.0644599	0	1
agelessthan50	720	.9375	.2422297	0	1
female	720	.6291667	.4833637	0	1
*hhsize**	720	1.125	.8624044	1	10
married	720	.4319444	.4956911	0	1
separated	720	.0041667	.0644599	0	1
divorced	720	.0069444	.0831012	0	1
distancetodest	720	128.9417	330.0483	0	2378
distancetodestsquare	720	125406.6	540237.4	0	5654884
logincome	720	2.585606	1.060661	2.302585	11.5129
predictprovi1	720	.0013886	.0141099	3.79e-17	.1627673
predictprovi2	720	.0833378	.243652	1.37e-08	.8612446
predictprovi3	720	.0666693	.2021116	1.82e-06	.8618525
predictprovi4	720	.0069409	.0186402	1.75e-14	.1106069
predictprovi5	720	.0458335	.1783323	3.53e-06	.9781293
predictprovi6	720	.0402773	.1490564	2.57e-12	.7901541
predictprovi7	720	.1611108	.2601728	.0000295	.8098088
predictprovi8	720	.1249992	.1760545	.0005506	.5966146
predictprovi9	720	.0736104	.1106438	.0000965	.4306231
predictprovi10	720	.0722211	.1534359	.0000839	.8689435
predictprovi11	720	.0986111	.1739345	.0000637	.5795197
predictprovi12	720	.0555557	.1907809	2.61e-06	.904353
predictprovi13	720	.0402777	.1392895	4.56e-06	.76888
predictprovi14	720	.0013888	.0043255	8.73e-13	.043565
predictprovi15	720	.073611	.2042233	2.56e-06	.879409
predictprovi16	720	.0527779	.1938844	1.29e-13	.9221561
predictprovi17	720	.0013889	.0081199	6.79e-16	.1262817

Notes: *This is because most of the migrants are single. Moreover, this study restricts the dataset to migrants.

Table 4. 7 Correlation Table of Model M2 (Part 1 out of 3)

VariableID		1	2	3	4	5	6	7	8	9	10
1	*SelfEmployed*	1.000									
2	*PrivateWorker*	-0.3609*	1.000								
3	*PublicWorker*	-0.1789*	-0.2138*	1.000							
4	*FamilyWorker*	-0.1242*	-0.1485*	-0.0736*	1.000						
5	*terteducation*	0.0155	-0.0425	0.1254*	-0.0146	1.000					
6	*agelessthan50*	-0.1164*	0.0946*	0.0256	0.0317	-0.2505*	1.000				
7	*female*	0.1835*	0.2661*	0.1132*	-0.1875*	0.0497	-0.1863*	1.000			
8	*hhsize*	0.0578	-0.0953*	-0.0472	0.0122	-0.0094	-0.3221*	0.1114*	1.000		
9	*married*	0.2383*	0.2338*	0.1924*	-0.1580*	0.0742*	-0.1803*	0.6695*	-0.0549	1.000	
10	*separated*	0.0155	-0.0425	-0.0211	-0.0146	-0.0042	-0.0724	0.0497	0.2408*	-0.0564	1.000
11	*divorced*	-0.0063	-0.0185	-0.0272	-0.0189	-0.0054	-0.1166*	0.0642	0.0849*	-0.0729	-0.0054
12	*distancetodest*	0.0334	-0.0373	-0.0203	-0.0152	0.0179	-0.0160	0.0661	0.0352	-0.0062	0.0905*
13	*logincome*	0.0915*	0.0251	0.0987*	0.0320	-0.0173	0.0580	0.0900*	-0.0029	0.1325*	-0.0173
14	*predictprovi1*	-0.0112	0.0402	0.0188	-0.0182	-0.0064	0.0231	0.0083	-0.0132	-0.0189	-0.0063
15	*predictprovi2*	0.0604	0.0295	-0.0129	0.0839*	-0.0221	-0.0300	0.0115	0.0151	0.0516	-0.0205
16	*predictprovi3*	0.0017	-0.0417	0.0474	0.0238	-0.0211	-0.0330	0.0038	0.0097	-0.0038	0.0053
17	*predictprovi4*	0.0457	-0.0186	-0.0376	0.0812*	-0.0241	-0.0045	-0.0687	-0.0007	-0.0088	0.0037
18	*predictprovi5*	0.1063*	-0.0937*	0.0312	-0.0447	-0.0123	-0.1236*	0.0259	0.0268	0.0684	0.0021
19	*predictprovi6*	0.1232*	-0.0007	-0.0429	0.0732*	-0.0162	0.0516	0.0481	-0.0173	0.0964*	0.0180
20	*predictprovi7*	-0.0979*	0.1549*	-0.0450	-0.1069*	0.0926*	0.0241	0.0212	0.0061	0.0215	0.0401
21	*predictprovi9*	-0.0486	0.0555	-0.0384	0.0159	-0.0138	0.0589	-0.0312	0.0296	-0.1360*	0.0488
22	*predictprovi10*	-0.1343*	-0.0931*	-0.0164	-0.0187	-0.0150	0.0679	0.0768*	-0.0202	-0.2171*	-0.0060
23	*predictprovi11*	-0.0558	0.0483	0.0059	0.0488	0.0308	-0.0009	-0.0658	-0.0112	-0.0347	-0.0138
24	*predictprovi12*	-0.0112	-0.0134	-0.0482	-0.0396	-0.0162	0.0104	-0.0903*	-0.0363	-0.0564	-0.0169
25	*predictprovi13*	0.0616	-0.0828*	0.0911*	0.0630	-0.0086	0.0187	-0.0070	-0.0301	0.0225	-0.0166
26	*predictprovi14*	0.0901*	-0.0994*	-0.0138	0.0838*	-0.0203	0.0333	-0.0970*	-0.0058	-0.0228	-0.0169
27	*predictprovi15*	0.0332	-0.0999*	0.0179	0.0368	-0.0096	-0.0237	-0.0593	0.0143	0.0210	-0.0211
28	*predictprovi16*	0.0036	-0.0150	0.0496	-0.0003	-0.0141	-0.0154	0.0181	-0.0102	0.0871*	-0.0174
29	*predictprovi17*	-0.0302	0.0115	-0.0424	-0.0383	-0.0111	0.0212	-0.0658	-0.0246	-0.0264	-0.0111

Notes: * significant at minimum 5%

Table 4. 7 Correlation Table of Model M2 (Part 2 out of 3)

VariableID		11	12	13	14	15	16	17	18	19	20
11	*divorced*	1.000									
12	*distancetodest*	0.0165	1.000								
13	*logincome*	-0.0223	0.0035	1.000							
14	*predictprovi1*	-0.0069	0.1263*	0.0950*	1.000						
15	*predictprovi2*	0.0294	0.1087*	0.0492	0.2798*	1.000					
16	*predictprovi3*	-0.0185	0.0396	0.0753*	-0.0014	0.0897*	1.000				
17	*predictprovi4*	0.0033	0.0361	0.0391	0.0013	0.6428*	0.5003*	1.000			
18	*predictprovi5*	-0.0188	-0.0326	-0.0135	-0.0239	-0.0769*	-0.0079	-0.0322	1.000		
19	*predictprovi6*	-0.0151	-0.0061	-0.0220	-0.0260	-0.0726	-0.0420	-0.0393	0.0252	1.000	
20	*predictprovi7*	0.0337	-0.0440	-0.0013	-0.0597	-0.2027*	-0.1690*	-0.2013*	-0.0992*	-0.1047*	1.000
21	*predictprovi9*	-0.0167	0.0810*	-0.0653	-0.0651	-0.2173*	-0.2025*	-0.2375*	-0.1551*	-0.0951*	-0.0583
22	*predictprovi10*	-0.0209	0.0069	-0.0782*	-0.0463	-0.1580*	-0.1316*	-0.1716*	-0.1001*	-0.0897*	-0.1772*
23	*predictprovi11*	0.0137	0.0041	-0.0284	-0.0558	-0.1936*	-0.1839*	-0.2079*	-0.1394*	-0.1174*	-0.2486*
24	*predictprovi12*	-0.0203	-0.0785*	-0.0616	-0.0287	-0.0997*	-0.0960*	-0.1084*	-0.0745*	-0.0760*	-0.1673*
25	*predictprovi13*	-0.0175	-0.0590	0.0214	-0.0285	-0.0988*	-0.0951*	-0.1073*	-0.0735*	-0.0698	-0.1692*
26	*predictprovi14*	-0.0190	0.0762*	0.0293	-0.0316	-0.1095*	-0.1051*	-0.1182*	-0.0797*	-0.0640	-0.1325*
27	*predictprovi15*	-0.0255	-0.0404	0.0617	-0.0355	-0.1229*	-0.1179*	-0.1336*	-0.0911*	-0.0843*	-0.2026*
28	*predictprovi16*	-0.0221	0.0178	0.0503	-0.0268	-0.0932*	-0.0898*	-0.1014*	-0.0698	-0.0726	-0.1646*
29	*predictprovi17*	-0.0143	0.1968*	-0.0452	-0.0169	-0.0586	-0.0565	-0.0638	-0.0439	-0.0461	-0.1028*

Notes: * significant at minimum 5%

Table 4. 7 Correlation Table of Model M2 (Part 3 out of 3)

VariableID		21	22	23	24	25	26	27	28	29
21	*predictprovi9*	1.000								
22	*predictprovi10*	0.3415*	1.000							
23	*predictprovi11*	0.3601*	0.1480*	1.000						
24	*predictprovi12*	-0.0775*	-0.0926*	-0.0206	1.000					
25	*predictprovi13*	-0.0870*	-0.0674	0.0727	0.0600	1.000				
26	*predictprovi14*	0.0413	-0.0668	0.0927*	-0.0425	0.0218	1.000			
27	*predictprovi15*	-0.1249*	-0.1007*	0.0008	-0.0835*	0.0035	0.5896*	1.000		
28	*predictprovi16*	-0.1628*	-0.1182*	-0.1032*	-0.0656	0.0014	0.0138	0.0668	1.000	
29	*predictprovi17*	-0.0841*	-0.0766*	-0.0669	0.5484*	-0.0303	0.0109	-0.01	0.0900*	1.000

Notes: * significant at minimum 5%

Table 4. 8 Remittances and Migration Model M2
(Complete Model, Part 1 out of 2)
– Second Step –
Dependent variable: remittances (log)

Model	M2(1)	M2(2)	M2(3)	M2(4)	M2(5)	M2(6)	M2(7)	M2(8)	M2(9)
SelfEmployed	0.779**	0.787**	0.825***	0.882***	0.886***	0.916**	0.840**	0.900**	0.838**
	(0.315)	(0.316)	(0.316)	(0.314)	(0.316)	(0.359)	(0.382)	(0.360)	(0.355)
PublicWorker	1.271***	1.271***	1.230***	1.296***	1.303***	1.337***	1.131***	1.365***	1.328***
	(0.314)	(0.314)	(0.314)	(0.330)	(0.334)	(0.369)	(0.378)	(0.367)	(0.370)
PrivateWorker	0.392	0.431	0.378	0.440	0.447	0.489	0.462	0.517	0.437
	(0.401)	(0.408)	(0.409)	(0.420)	(0.422)	(0.472)	(0.490)	(0.474)	(0.478)
FamilyWorker	0.485	0.485	0.445	0.432	0.431	0.448	0.442	0.457	0.391
	(0.557)	(0.557)	(0.557)	(0.560)	(0.561)	(0.563)	(0.579)	(0.561)	(0.564)
terteducation		-1.314***	-0.375	-0.397	-0.363	-0.403	-0.852	-0.611	-0.577
		(0.281)	(0.397)	(0.401)	(0.448)	(0.445)	(0.528)	(0.556)	(0.561)
agelessthan50			0.984***	0.932***	0.965**	0.903**	0.832**	0.852**	0.794**
			(0.308)	(0.332)	(0.385)	(0.398)	(0.405)	(0.390)	(0.391)
Female				-0.131	-0.137	-0.0912	0.0776	-0.164	-0.162
				(0.280)	(0.283)	(0.343)	(0.411)	(0.350)	(0.350)
hhsize					0.0293	-0.0161	-0.0401	-0.00627	-0.0126
					(0.122)	(0.0787)	(0.0849)	(0.0805)	(0.0836)
married						-0.0923	-0.182	-0.0303	-0.0547
						(0.413)	(0.463)	(0.414)	(0.414)
separated						2.352	1.914	1.875	1.885
						(2.125)	(2.203)	(2.182)	(2.211)
divorced						-0.841*	-1.087**	-0.964**	-0.970**
						(0.433)	(0.517)	(0.486)	(0.482)
distancetodest								0.00172*	0.00180*
								(0.000988)	(0.000985)
distancetodestsquare								-0.000000673	-0.000000731
								(0.000000492)	(0.000000494)
logincome									0.157
									(0.146)

Table 4.8 Remittances and Migration Model M2
(Complete Model, Part 2 out of 2)
– Second Step –
Dependent variable: remittances (log)

Model	M2(1)	M2(2)	M2(3)	M2(4)	M2(5)	M2(6)	M2(7)	M2(8)	M2(9)
Predictprovi1							-9.553**		
							(4.536)		
predictprovi2							-0.100		
							(1.186)		
predictprovi3							0.650		
							(1.151)		
predictprovi4							-3.313		
							(12.34)		
predictprovi5							-0.159		
							(0.961)		
predictprovi6							0.652		
							(1.279)		
predictprovi7							0.655		
							(1.222)		
(region 8 as base alternative)									
predictprovi9							1.478		
							(1.720)		
predictprovi10							-1.301		
							(1.181)		
predictprovi11							0.572		
							(1.153)		
predictprovi12							-0.609		
							(1.129)		
predictprovi13							0.596		
							(1.228)		
predictprovi14							-12.99		
							(20.29)		
predictprovi15							-0.480		
							(0.926)		
predictprovi16							-0.849		
							(0.927)		
predictprovi17							35.41		
							(22.52)		
Constant	3.067***	3.067***	2.151***	2.244***	2.180***	2.274***	2.253**	2.188***	1.885***
	(0.171)	(0.171)	(0.298)	(0.385)	(0.507)	(0.479)	(0.952)	(0.459)	(0.532)
Observations	720	720	720	720	720	720	720	720	720
R-squared	0.024	0.025	0.029	0.030	0.030	0.032	0.053	0.039	0.042
Adjusted R-squared	0.019	0.018	0.021	0.020	0.019	0.017	0.016	0.022	0.023
AIC	3760.6	3762.1	3760.6	3762.4	3764.4	3768.5	3784.6	3767.2	3767.4
BIC	3783.5	3789.6	3792.7	3799.0	3805.6	3823.4	3912.8	3831.3	3836.1

Note: Robust Standard errors in parentheses;* p<0.10, ** p<0.05, *** p<0.01

Table 4.9 Region Codes (*ProvID*) and Distances (in Kilometres) in the Origin-Destination Matrix (Part 1 out of 2)

				Destination								
Origin			Region	1	2	3	4	5	6	7	8	9
	Capital City (CapCity)	Province Name (ProvName)	CapCity	Aceh	Medan	Padang	Pekanbaru	Palembang	Bandar Lampung	Jakarta	Bandung	Semarang
			ProvID	11	12	13	14	16	18	31	32	33
1	Aceh	Aceh	11	0	427	920	876	1414	1650	1933	1949	2335
2	Medan	North Sumaterra	12	427	0	540	164	1001	1237	1421	1536	1823
3	Padang	West Sumatera	13	920	540	0	196	536	734	927	1038	1329
4	Pekanbaru	Riau	14	876	164	196	0	535	781	964	1072	1366
5	Jambi	Jambi	15	1215	791	366	339	199	460	620	736	1022
6	Palembang	South Sumatera	16	1414	1001	536	535	0	274	431	544	833
7	Bengkulu	Bengkulu	17	1294	914	379	487	291	377	579	683	981
8	Bandar Lampung	Lampung	18	1650	1237	734	781	274	0	202	312	604
9	Jakarta	Jakarta	31	1933	1421	927	964	431	202	0	130	402
10	Bandung	West Java	32	1949	1536	1038	1072	544	312	130	0	312
11	Semarang	Central Java	33	2335	1823	1329	1366	833	604	402	312	0
12	Yogyakarta	Yogyakarta	34	2363	1851	1357	1394	861	632	430	316	95
13	Surabaya	East Java	35	2593	2081	1587	1624	1091	862	660	570	256
14	Denpasar	Bali	51	2889	2377	1883	1920	1387	1158	956	860	557
15	Mataram	NTB	52	2981	2469	1975	2012	1479	1250	1048	966	649
16	Pontianak	West kalimantan	61	2659	2147	1653	1690	1157	928	726	797	790
17	Palangka Raya	Central Kalimantan	62	2823	2311	1817	1854	1321	1092	890	877	660
18	Banjarmasin	South Kalimantan	63	2839	2327	1833	1870	1337	1108	906	879	621
19	Samarinda	East Kalimantan	64	3228	2716	2222	2259	1726	1497	1295	1280	1037
20	Manado	North Sulawesi	71	4098	3586	3092	3129	2596	2367	2165	2138	1858
21	Makasar	South Sulawesi	73	3319	2807	2313	2350	1817	1588	1386	1322	1018
22	Kendari	South East Sulawesi	74	3678	3166	2672	2709	2176	1947	1745	1690	1379

Source: authors own measurement using https://www.daftlogic.com/projects-google-maps-distance-calculator.htm

Table 4.9 Region Codes (*ProvID*) and Distances (in Kilometres) in the Origin-Destination Matrix (Part 2 out of 2)

				Destination							
Origin			Region	10	11	12	13	14	15	16	17
	Capital City (CapCity)	Province Name (ProvName)	CapCity	Yogyakarta	Surabaya	Denpasar	Mataram	Palangka Raya	Banjarmasin	Makasar	Jayapura
			ProvID	34	35	51	52	62	63	73	82
1	Aceh	Aceh	11	2363	2593	2889	2981	2823	2839	3319	5695
2	Medan	North Sumaterra	12	1851	2081	2377	2469	2311	2327	2807	5183
3	Padang	West Sumatera	13	1357	1587	1883	1975	1817	1833	2313	4689
4	Pekanbaru	Riau	14	1394	1624	1920	2012	1854	1870	2350	4726
5	Jambi	Jambi	15	1050	1280	1576	1668	1510	1526	2006	4382
6	Palembang	South Sumatera	16	861	1091	1387	1479	1321	1337	1817	4193
7	Bengkulu	Bengkulu	17	1009	1239	1535	1627	1469	1485	1965	4341
8	Bandar Lampung	Lampung	18	632	862	1158	1250	1092	1108	1588	3964
9	Jakarta	Jakarta	31	430	660	956	1048	890	906	1386	3762
10	Bandung	West Java	32	316	570	860	966	877	879	1322	3698
11	Semarang	Central Java	33	95	256	557	649	660	621	1018	3390
12	Yogyakarta	Yogyakarta	34	0	245	513	608	726	672	1018	3382
13	Surabaya	East Java	35	245	0	309	394	580	487	775	3137
14	Denpasar	Bali	51	513	309	0	101	734	601	610	1902
15	Mataram	NTB	52	608	394	101	0	748	609	526	2802
16	Pontianak	West kalimantan	61	884	888	1163	1214	557	685	1256	3500
17	Palangka Raya	Central Kalimantan	62	726	580	734	748	0	140	694	2972
18	Banjarmasin	South Kalimantan	63	672	487	601	609	140	0	567	2901
19	Samarinda	East Kalimantan	64	1091	895	938	910	408	424	577	2625
20	Manado	North Sulawesi	71	1892	1658	1557	1478	1284	1261	953	1817
21	Makasar	South Sulawesi	73	1018	775	610	526	694	567	0	2378
22	Kendari	South East Sulawesi	74	1402	1139	958	873	975	878	364	2020

Source: authors own measurement using https://www.daftlogic.com/projects-google-maps-distance-calculator.htm

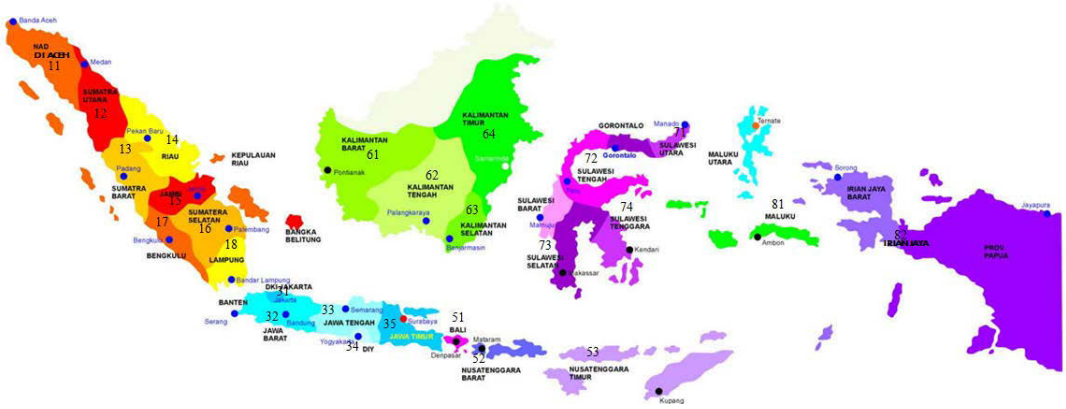

Figure 4. 1 Location of Each Province (Region) on Map of Indonesia
Source: authors own illustration.

Chapter 5
Conclusions

5.1 Overview of the Main Findings

5.1.1 Soft Skills, Hard Skills, and Individual Innovativeness

This study focuses on skills at an individual level because skills belong to firm's employees instead of the firm. Skills that are related to innovativeness at the individual level must be investigated through scientific research because there are research gaps regarding skills in the context of innovation at the individual level. Previous studies have focused on skills that are related to innovation at the firm level instead of the individual level. Previous researchers have shown that at the firm level, training and knowledge management might determine a firm's innovative performance. Some researchers have studied training at the firm level: (1) Ballot and Taymaz (1997) researched training and innovation, and firms' investment in specific skills through training to gain innovation benefits; (2) Acemoglu (1997) found that companies tend to have innovation when their employees spend more time in training to learn some skills; (3) Laplagne and Bensted (1999) examined the relationship between training, innovation, and productivity at an organizational-level and found that a combination of training and innovation can increase labour productivity growth; (4) Roy, Cantner, and Gerstlberger (2013) found that some training is essential for innovation. Firms that invest in "general-organizational and managerial training" have a higher probability of having innovation

This study has the following objectives: (1) to examine the models which describe the relationship between soft skills, hard skills, and innovativeness; and (2) to give suggestions which could then be used as basis for studies which try to establish causal-effects relationship between soft skills and hard skills and individual innovativeness which then can be used for practical and policy recommendations. This research will answer the following questions: do soft skills and hard skills of workers have a positive relationship with their innovativeness? Is there any interaction or moderating relationship between soft skills and hard skills with individual innovativeness?

There are three hypotheses in this study: First hypothesis, soft skills are positively associated with individual innovativeness. Second hypothesis, hard skills are positively associated with individual innovativeness. Third hypothesis, the interaction between soft skills and hard skills is positively associated with individual innovativeness.

Cross-sectional data are used from a survey on manager and worker perceptions related to individual innovation performance on the one hand and individual skills on the other hand. An on-line questionnaire was applied for surveys to the firms of different sizes and from different industries in Indonesia. The survey provides 519 individual-level data. Using the ordinary least squares (OLS) model there are some findings to be taken into considerations.

The result shows that soft skills and hard skills are significantly and positively associated with innovativeness. Soft skills consist of some variables such as innovation leadership (IL), relationship building (RB), tolerance for uncertainty (TU), and passion and optimism (PO); whereas, hard skills consist of factors such as ICT skills, tools and equipment skills, and learning and conceptual skills. Therefore, all of these particular skills should be developed to increase workers' innovativeness. There is no interactive relationship between soft skills and hard skills with innovativeness. In this case, a worker who has both a high level of soft skills and hard skills will not necessarily have a level of innovativeness which exceeds the level which can be attributed to both skills considered individually. Increasing soft skills and hard skills of employees could increase the employees' innovativeness. In this case, an employee can have higher soft skills with lower hard skills, or the other way around, in order to have higher innovativeness. It is not necessary to have higher levels of both soft skills and hard skills.

5.1.2 The Attractiveness of Regional Knowledge and Entrepreneurship for Migration

Entrepreneurship and migration are two concepts that deal with regional economics and are related to individuals. No research so far has analysed if the level of entrepreneurial activities in a region can induce people to migrate there. The presence of a large number of small companies in a region is an indication that it offers a good environment in which to establish new firms, most of which are usually small in size. Entrepreneurial activities in a region are important because they present economic alternatives for earning money. One of the supporting factors of a region for entrepreneurial activities is knowledge. Knowledge is important for people to succeed economically. There are research gaps concerning the determinant factors of the location choice in regional migration that connect to entrepreneurship and knowledge.

The aim of this study is to examine the region-specific factors – specifically entrepreneurship and knowledge – that can become determinant factors of the location choice in regional migration. This study has the following research question: Are knowledge and entrepreneurship significant determinant variables of regional choice in regional migration?

There are two hypotheses in this study: First hypothesis, the education index of a region is positively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus. Second hypothesis, the number of micro and small enterprises in a region is positively associated with the likelihood of that region being chosen as a migration destination, ceteris paribus.

This research uses two secondary datasets, the Indonesian Family Life Survey (IFLS) and Statistics Indonesia (*Badan Pusat Statistik*–BPS). The IFLS-5 2014/2015 wave is used for this research.

The total migrants to be observed are 916 individuals who migrate for the last time in the period 2010–2014. There are 18 alternative region choices. Therefore, in this research there are 16,488 observations constituting the sample.

The model used by this research to show the region choice in regional migration is the alternative-specific conditional logit model based on McFadden (1974). This model can predict the likelihood or probability of an individual choosing an alternative, given some possible alternatives, based on a factor or a determinant condition (explanatory variable) that can describe the alternatives.

In terms of knowledge that can support businesses, using the education index as a proxy, people in Indonesia would like to choose regions with less-developed knowledge. On the other hand, in the context of entrepreneurship, the number of small enterprises of a region is positively associated with the likelihood of that region being chosen as a migration destination.

This research investigates regional migration in Indonesia. It is a specific country case that focuses on the human capital of the inhabitants of Indonesia. This research can improve the previous research in terms of the methodology, which applies the pairwise comparison/ratio of the origin–destination regions to build the alternative-specific conditional logit model for region choices.

5.1.3 Regional Choices and Remittances: Evidence from Indonesia

Remittances are important because of their contribution to economic development. The objective of this study is to empirically examine some determinant factors of remittances. There are gaps in determinant variables of remittances related to occupational status, education level, and age group. This study has the following research question: Are self-employment, tertiary-education level, and young age significant determinant variables of remittances?

There are three hypotheses in this study. First hypothesis, the self-employed status group is positively associated with remittances. Second hypothesis, the tertiary level of education is positively associated with remittances. Third hypothesis, the relatively young age group of migrants is positively associated with remittances.

This study uses two secondary datasets, the IFLS and the BPS. This research applies IFLS-1, the 1993 wave. The secondary data of the period 1990–1992 from the BPS are used to examine the region-specific determinants of the region choice.

A two-step procedure is chosen with the before-migration phase as the first step and the after-migration phase as the second step. The first step applies the region choice model to the regional migration context, which is developed based on McFadden (1974): the alternative-specific conditional logit model. This model is similar to the model used in the previous chapter (Chapter 3). In the second step, migrants start to remit and the determinant variables of remittances are examined. This is the main econometric model, because the predictive values of the region choices model of the first step will be used as control variables. The model uses the prediction model to examine the determinants of remittances to test the research hypotheses based on an ordinary least square model (OLS) model.

This study makes new contributions to the migration and remittances literature. The contributions are the new explanatory variables, such as self-employment status. Migrants' status of self-employment is significantly correlated with remittances. Migrants who have a tertiary level of education do not have a significant association with remittances but the young group of migrants has a significant association with remittances.

5.2 Novelty

This dissertation is based on original researches. Furthermore, the results can contribute to add new literature, especially on soft skills and hard skills in the context of innovation at the individual level, the determinants of location choices and the determinants of remittances in regional migration context. The first study (Chapter 2) explains a study using primary data from an on-line questionnaire which is developed by the authors based on some references. The findings can improve the understanding regarding soft skills, hard skills and individual innovativeness. Moreover, this study minimizes the research gaps concerning skills in the context of innovation at the individual level. This study contributes specifically to the research on skills and innovation at the individual level in the context of Indonesian firms.

Also at the individual level, but in the family life and regional migration context, the second and the third studies are conducted to examine the determinant of region choice and remittances. To improve previous models, the alternative specific conditional logit model is used and some explanatory variables are created to capture the aspects of human capital, knowledge and entrepreneurship. The second study (Chapter 3) minimizes research gaps concerning the determinant factors of the location choice in regional migration that connect to entrepreneurship and knowledge. For the third study (Chapter 4), a new method that uses a two-step model is applied to examine the determinants of remittances. This method is the first method in the remittances in the regional migration context. This study minimizes research gaps in determinant variables of remittances related to occupational status, education level, and age group.

Both the second and the third studies use the datasets of the IFLS and the BPS. These studies and examinations are new for the regional migration case of Indonesia. Therefore, these studies contribute specifically to the research on regional choice and remittances of individuals in the context of Indonesian families and regional migration.

5.3 Policy/Practical Implications

Based on Chapter 2, this study becomes a first step providing some suggestions which could then be used as basis for studies which try to establish causal-effects relationship between soft skills and hard skills and individual innovativeness which then can be used for practical and policy recommendations.

Soft skills and hard skills are significantly and positively associated with innovativeness. There is no interactive relationship between soft skills and hard skills with innovativeness. If the causal-effect relationships are hold true, firms should develop trainings for both types of skills, hard skills and soft skills. Firms can have mixed employees composed of people who only have high soft skills and people who only have high hard skills because there is no interaction effect between soft skills and hard skills with innovativeness. In this case, a worker who has both a high level of soft skills and hard skills will not necessarily have a high level of innovativeness

Based on Chapter 3, this study becomes also a first step providing some suggestions which could then be used as basis for studies which try to establish causal-effects relationship between region specific variables and region choice in migration which then can be used for practical and policy recommendations. Based on the findings, migrants would like to choose regions with less-developed knowledge when they compare the destination and origin conditions. If further study to examine the causal-effects relationship of this finding can show that this finding is hold true, the local government of the destination region can design knowledge transfer or knowledge-sharing policies that take advantage of the migrants' knowledge because previously they lived in a region with a higher level of knowledge. Migrants flow to regions with more entrepreneurial activities. This suggest to examine the effect of regional entrepreneurship to the region choice because if it is hold true the government could maintain the entrepreneurship ecosystem in the destination region to support migrants' firm performance and sustainability. It is also important to create a supportive entrepreneurship ecosystem in the origin region to keep the human capital in the region and develop entrepreneurship.

Chapter 4 provides basis for studies which try to establish causal-effects relationship between self-employed migrants and the young group of migrants and remittances which then can be used for practical and policy recommendations. Self-employed migrants can help the economic condition through remittances not only for themselves and for their family but also for their origin region. If further study to examine the causal-effects relationship of this finding can show that this finding is hold true, the central government should support migrants who have moved to become successful self-employed migrants in the destination region so

that they can contribute to the economic development not only of the destination region but also of the origin region. The members of the relatively young group aged less than 50 years can contribute to their family through the transfer of funds. If it is hold true, both the central government and the regional government of the origin region can support the relatively young group if they want to migrate to another region as an alternative choice instead of being unemployed in the origin region.

5.4 Limitations and Further Research Agendas

There are some limitations and further research agendas for each study. Firstly, for the second chapter, the limitations are: (1) this study applies cross-sectional data. Hence, the tested model can only show associations instead of causal effects between the independent variable and the dependent variable; (2) the respondents to the on-line survey for each representative firm were limited to only those who had access to computers and the internet. It can be expected that younger employees and employees with a tertiary level education degree (academy/diploma and university) would be overrepresented in the survey; and (3) the generality of the findings might be valid only for firms in Indonesia.

Secondly, for the third chapter, this research has some limitations, such as the use of the time window of five years, the use of proxies for knowledge and entrepreneurship, and the use again of cross-sectional data. A further research agenda could try to answer questions such as the following: 1) why do people in Indonesia prefer regions with less-developed knowledge and 2) can migrants successfully develop start-ups or new firms in their destination region?

Thirdly, for the fourth chapter, there are some limitations. In particular, there are limited data for the explanatory variables of the region choices model, since the research uses data from 1990 to 1992; and there are no controls for economic needs of migrants' relatives, for example retired parents, or for personal reasons because of parent's heritage and so on. Further research on remittances might include other explanatory or control variables that can support remittances, such as the number of financial institutions and internet connections available to send money online. Support systems that are available today include financial institutions like banks but also online and mobile systems provided by cell phone or financial service providers. A further agenda that can be considered is to determine the effect of remittances on regional economic growth in Indonesia.

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